

Model Name: GA-B85N PHOENIX-WIFI

Revision 1.1

SHEET

TITLE

01	COVER SHEET
02	BOM & PCB MODIFY HISTORY
03	BLOCK DIAGRAM
04	CPU_LGA1150-A
05	CPU_LGA1150-B
06	CPU_LGA1150-C
07	DDR III CHANNEL A
08	DDR III CHANNEL B
09	PCH_FDI,DMI,USB,PCIE,NVRAM
10	PCH_DP,CLK BUFFER
11	PCH_HOST,SATA,PCI
12	PCH_GPIO,CTRL,AUDIO
13	PCH_PWR,GND
14	PCI EXPRESS*16 SLOT
15	ITE 8620 LPC IO
16	COM,KB_USB30
17	HWM,FAN CTRL,OV,-PROCHOT
18	DUAL BIOS
19	FP,FUSB,SPK,SATALED
20	Realtek ALC898
21	REAR AUDIO JACK
22	USB DAC POWER, mini PCI-E
23	INTEL LAN I217V
24	DISCRETE POWER
25	ATX,CLK GEN
26	RT8120_DDR POWER,M3 POWER
27	VCORE ISL95820_1

SHEET

TITLE

28	VCORE ISL95820_2
29	DVI-I
30	HDMI+USB2.0*2
31	mSATA, Mini-PCIe
32	Breathing LED

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Gigabyte Technology			
Cover Sheet			
Size	Document Number	GA-B85N-Phoenix-WIFI	Rev 1.1
Date:	Tuesday, April 01, 2014	Sheet 1	of 32

Model Name: GA-B85N PHOENIX-WIFI *Revision 1.1*

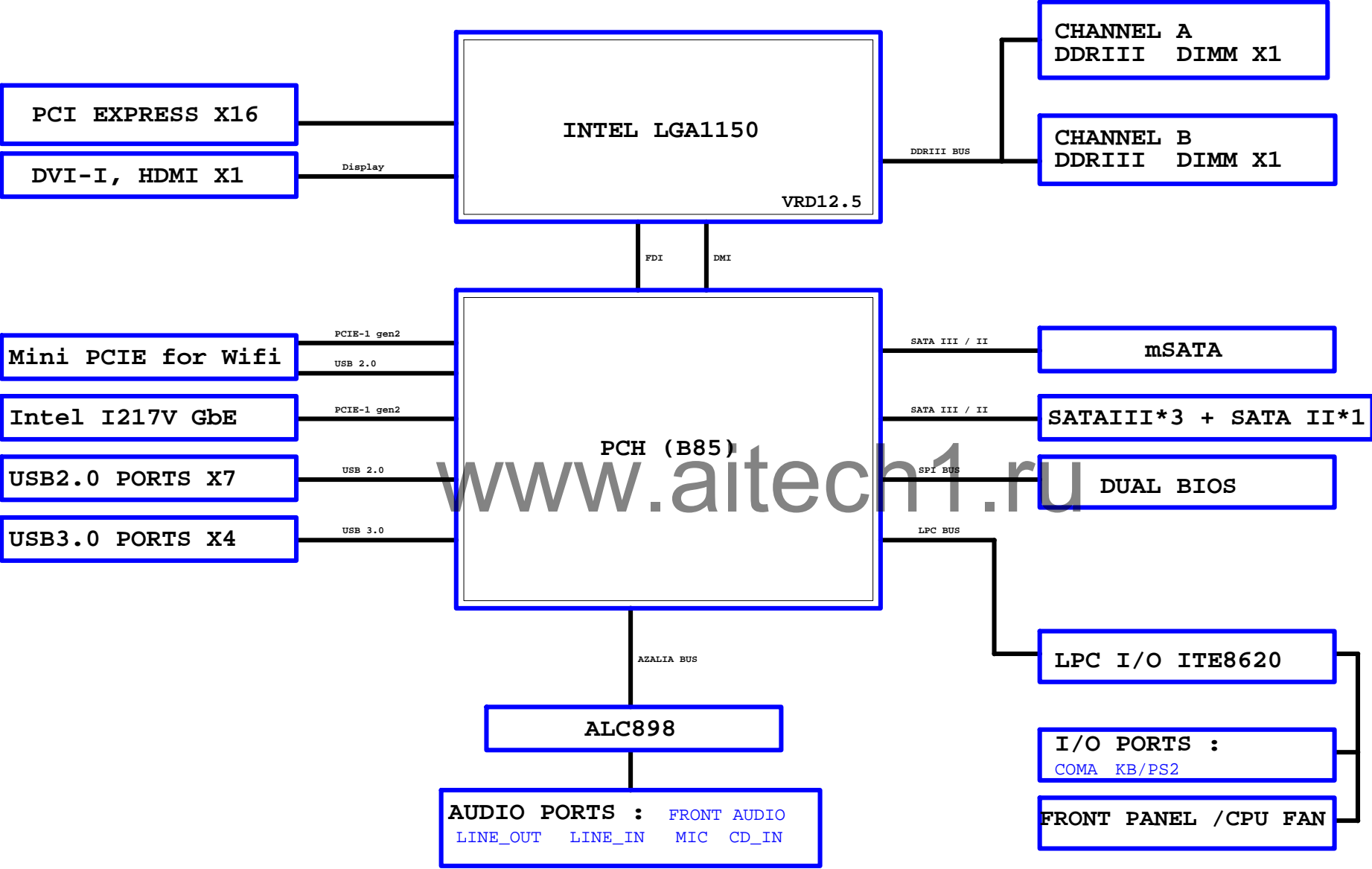
Circuit or PCB layout change

Component value change history

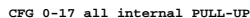
2013/07/02

[illegible][illegible]

BLOCK DIAGRAM



(E)

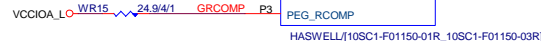


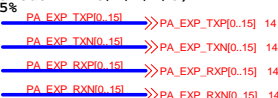
(D)



(C)

LGA1





-CPURST

CPU	PU/PD
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
9	9
10	10
11	11
12	12
13	13
14	14
15	15
16	16
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84	84
85	85
86	86
87	87
88	88
89	89
90	90
91	91
92	92
93	93
94	94
95	95
96	96
97	97
98	98
99	99
100	100



CPU LGA1150-A			
Size Custom	Document Number	GA-B85N-Phoenix-WIFI	Rev 1.1
Date:	Tuesday, April 01, 2014	Sheet	4 of 32

(A)

LGA1150A

HASWELL/[10SC1-F01150-01R_10SC1-F01150-03R]

(B)

LGA1150B

HASWELL/[10SC1-F01150-01R_10SC1-F01150-03R

LGA1150



LGA1150



COVER+BLACK NI

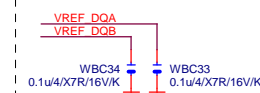
ILM_BP/1156/BKNI/[12KRC-0F0001-61R_12KRC-0F0001-62R

鍍金黑鎳

DDR BU

7	MODT_A[0..1]	↔	MODT_A[0..1]
8	MODT_B[0..1]	↔	MODT_B[0..1]
7	MDA[0..63]	↔	MDA[0..63]
8	MDB[0..63]	↔	MDB[0..63]
7	DQSA[0..7]	↔	DQSA[0..7]
7	-DQSA[0..7]	↔	-DQSA[0..7]
7	MAAA[0..15]	↔	MAAA[0..15]
8	MAAB[0..15]	↔	MAAB[0..15]
8	DQSB[0..7]	↔	DQSB[0..7]
8	-DQSB[0..7]	↔	-DQSB[0..7]

Place in CPU bottom side

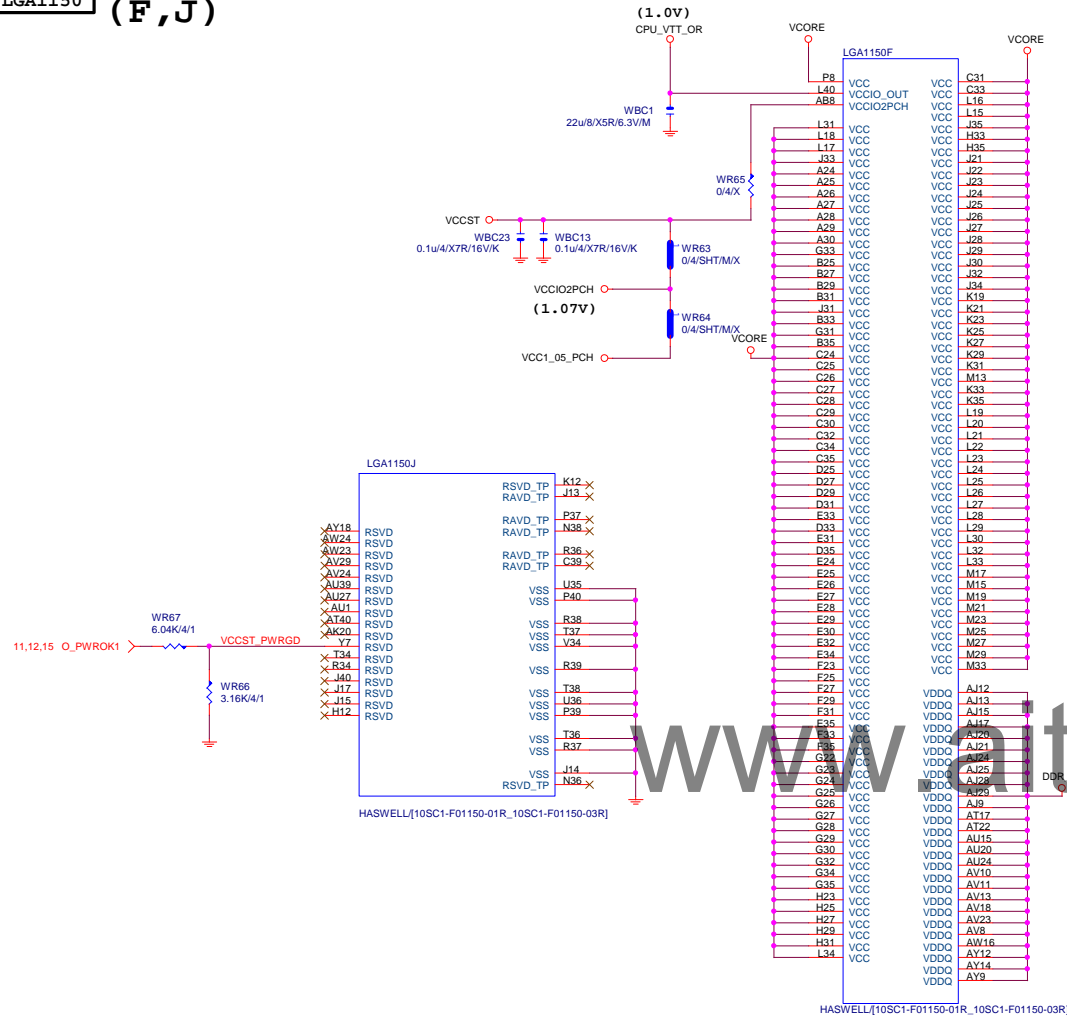


Gigabyte Technology

CPU LGA1150-B

Size Custom	Document Number GA-B85N-Phoenix-WIFI	Rev 1.1
Date: Tuesday, April 01, 2014	Sheet 5 of 32	

LGA1150 (F,J)

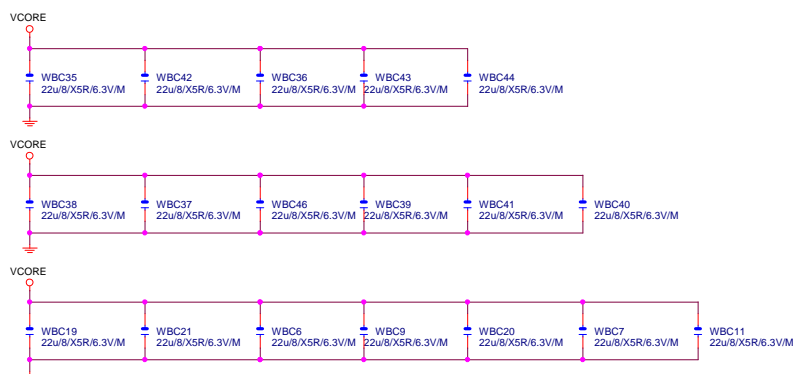


LGA1150 (G,H,I)



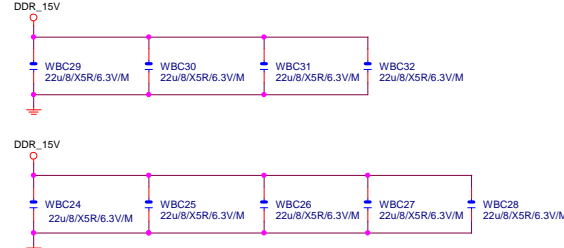
VCore CAP

(X18)



DDR CAP

(X9)

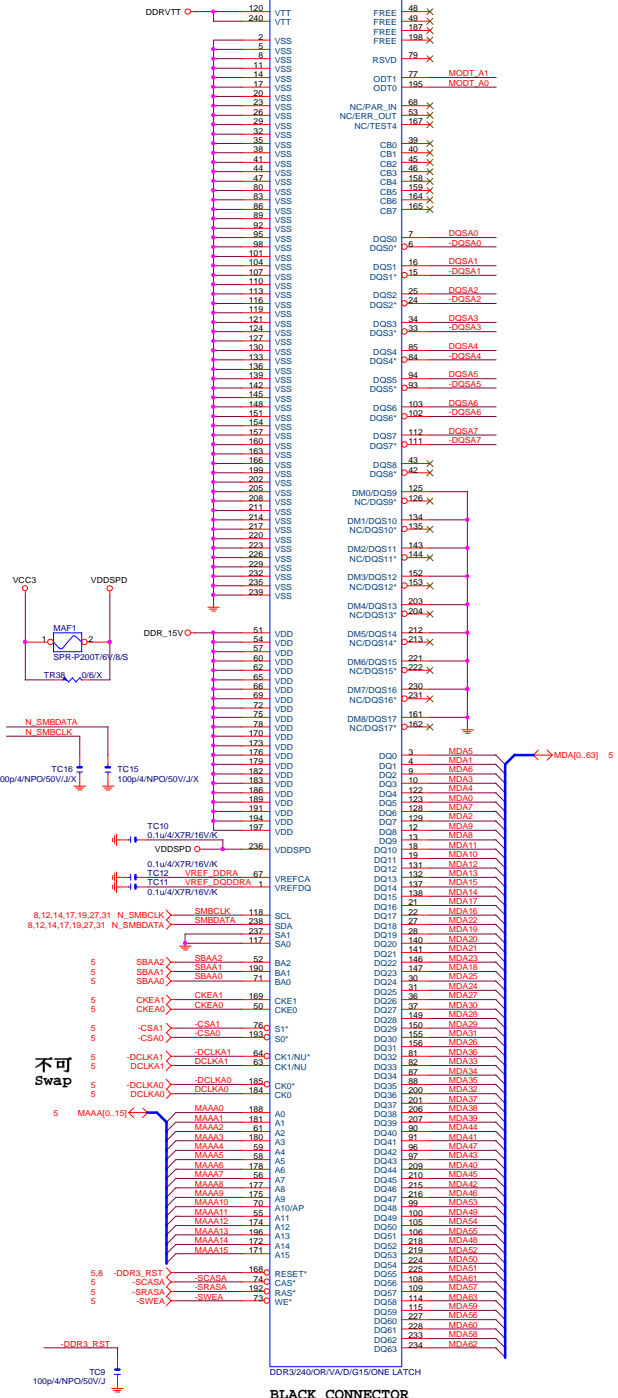


Gigabyte Technology

Title	CPU LGA1150-C
Size	Custom
Document Number	GA-B85N-Phoenix-WIFI
Date	Tuesday, April 01, 2014
Sheet	6 of 32
Rev	1.1

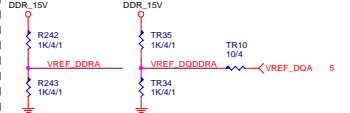
DDR3

(A)

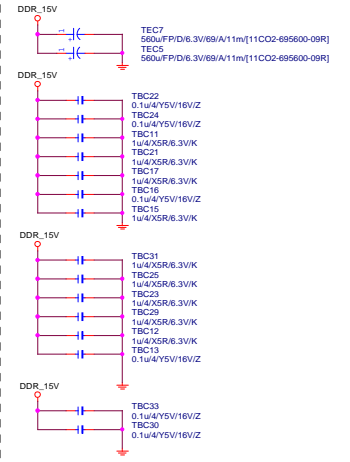


DDR3

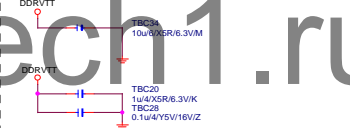
DDR3 VREF



DDR15V Decouple



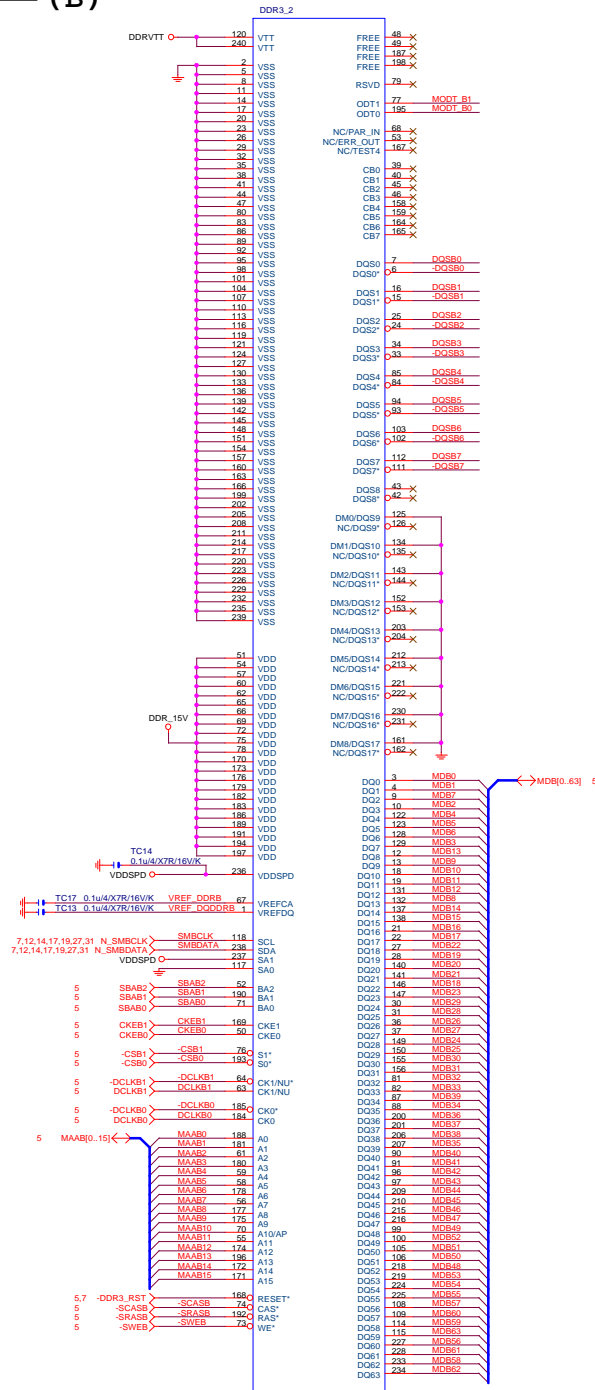
DDRVTT Decouple



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DDR3

(B)



DMI:12/4/4/4/12(breakout min 8/4/4/4/8)
Impedance=85 +- 17.5%

VCC1_5_PCH

NR50 7.5K/4/1 DMI_COMP

NR40 7.5K/4/1 PCIE_COMP

CK_SRCCLK_PCH

CK_SRCCLK_PCH

Category	Item	Value
I217	1	1
	2	1
	3	1
	4	1

[illegible]

```

_PCIEX1:16/5/5/5/16 (breakout_min_8/4/4/4/8)

```

PCHB

		USBN_8	AK16	N	+USBP8	N	-USBP8	19
DMI_RCOMP	USB	USBN_8	AV16	N	+USBP8	N	+USBP8	19
PCIE_RCOMP		USBN_9	AN16	N	-USBP9	N	-USBP9	19
		USBN_9	AP16	N	+USBP9	N	+USBP9	19
		USBN_9	AJ18	N	-USBP10	N	-USBP10	30
		USBN_10	AK18	N	+USBP10	N	+USBP10	30
CLKIN_DMI_N		USBP_10	AP18	N	-USBP11	N	-USBP11	30
CLKIN_DMI_P								

PCIe_PERP_2_USB3_RXP_3	OC0B_GP59	AE40	N_USBOC_R	16,2
PCIe_PETN_2_USB3_TXN_3	OC1B_GP40	AE37		
PCIe_PETP_2_USB3_TXP_3		AD39	N_USBOC_F	16,1
PCIe_PERN_3	OC2B_GP41	AD40		
PCIe_PERP_3	OC3B_GP42	AE39		
PCIe_PETN_3	OC4B_GP43	AC41		
PCIe_PETP_3	OC5B_GP9	AC40		

PCIE_PERN_6
PCIE_PERP_6
PCIE_PETN_6
PCIE_PETP_6
PCIE_PERN_7
PCIE_PERP_7
PCIE_PETN_7
PCIE_PETP_7
PCIE_PERN_8
PCIE_PERP_8
PCIE_PETN_8
PCIE_PETP_8

DH82B85/S

4/4/4/8.) -----

19 PCH_USB3_RXP5 > B12
19 PCH_USB3_TXN5 < B14
19 PCH_USB3_TXP5 < A14


VCC3

NR62 8.2K/4 AK28
NR63 8.2K/4 AT24

CK SRCCLK PO

CK_DOTCLK
CK_DOTCLK

NR225 short t
graphic SKU



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GRAY HS

CH_HS
CH_HS/[12SP2-S03507-01R]

```
OC[3:0]# for Device 2
OC[7:4]# for Device 2
```

USB OC# Configure

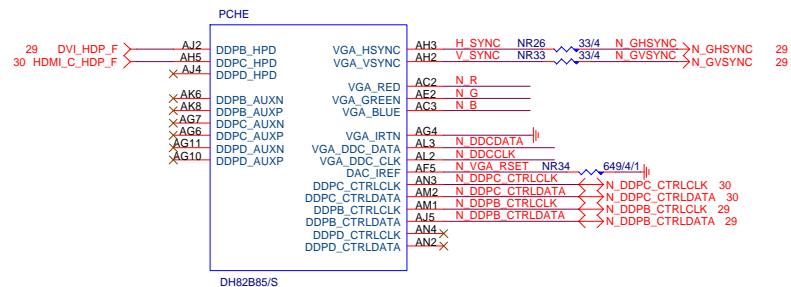
	Gigabyte Technology Co., Ltd.
Title	PCH FDI,DMI,USB ,PCIE

GA-B85N-PR

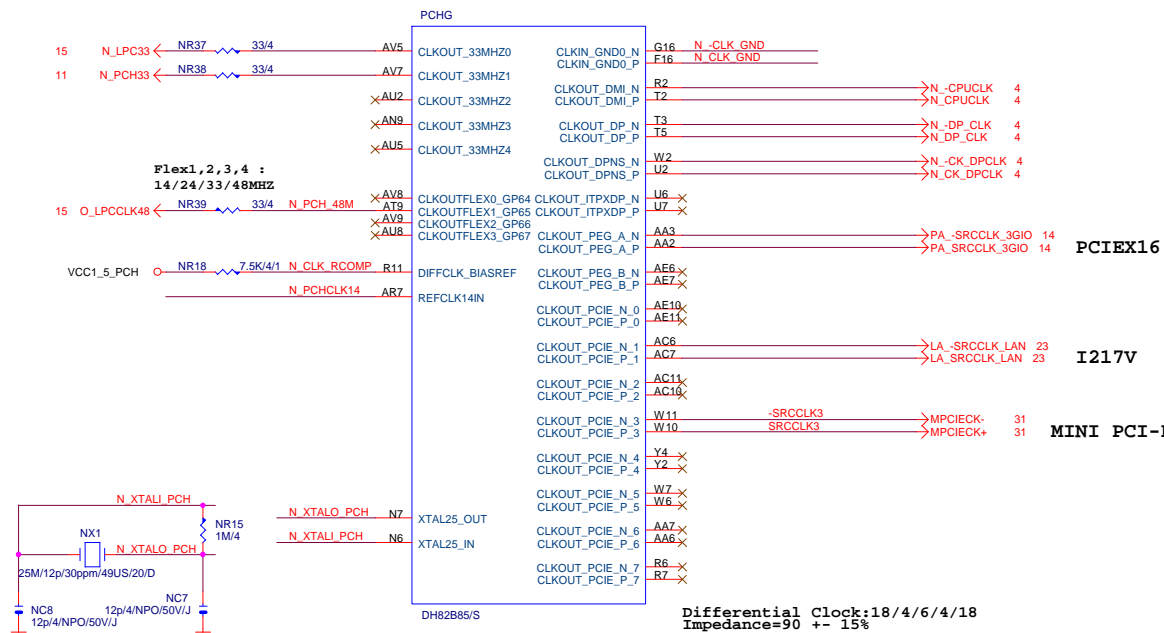
Date: Tuesday, April 01, 2014

	1
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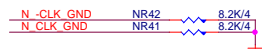
PCH (E)



PCH (G)



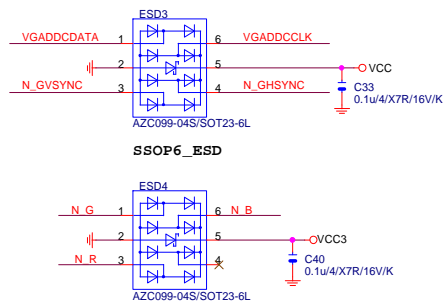
PCH CLK PD



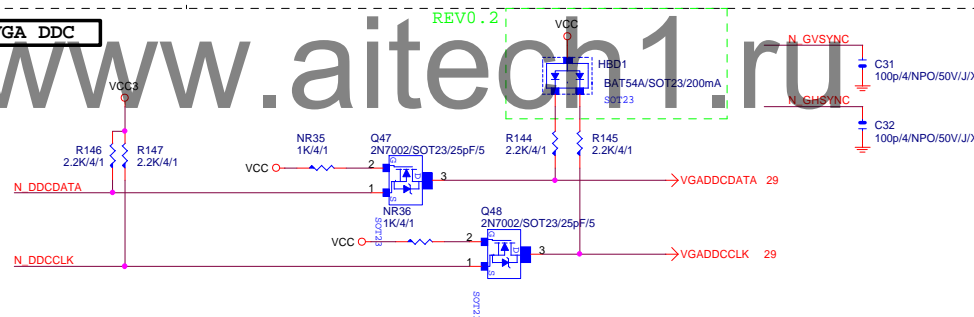
Mount for integrated clock Generation
Mode



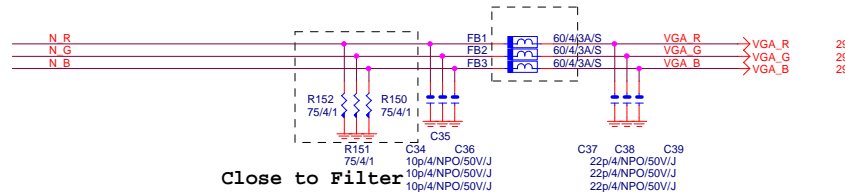
VGA ESD



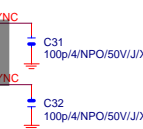
VGA DDC



VGA DDC



VGA CONNECTOR



SATA3 : 20/7.5/4.5/7.5/20 (breakout min 8/4/4/4/8)
Impedance=90 +- 17.5%
SATA2 : 15/7.5/4.5/7.5/15 (breakout min 8/4/4/4/8)
Impedance=90 +- 17.5%

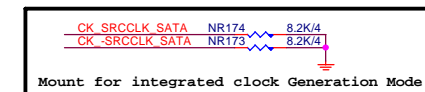
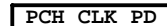


Figure 1 shows the pin connections for three components: NR160, NR155, and NR53. Each component is an 8.2K/8P4R/4 device. The connections are as follows:

- NR160:**
 - Pin 1: N_PIQRB
 - Pin 2: VCC3
 - Pin 3: N_PIQRD
 - Pin 4: VCC3
 - Pin 5: N_PIQRH
 - Pin 6: NR160
 - Pin 7: N_PIQRC
 - Pin 8: NR160
- NR155:**
 - Pin 1: N_PIQROG
 - Pin 2: VCC3
 - Pin 3: N_PIQROA
 - Pin 4: VCC3
 - Pin 5: N_PIQROF
 - Pin 6: NR155
 - Pin 7: N_PIQROE
 - Pin 8: NR155
- NR53:**
 - Pin 1: N_GPIOI55
 - Pin 2: VCC3
 - Pin 3: N_GPIOI50
 - Pin 4: VCC3
 - Pin 5: N_GPIOI17
 - Pin 6: NR53
 - Pin 7: N_GPIOI6
 - Pin 8: NR53

SATA3.0
 SATA2/7/WH/H/OP/VA/D/1/B/PA66
BLACK CONNECTOR

SATA3.1
 SATA2/7/WH/H/OP/VA/D/1/B/PA66
BLACK CONNECTOR

SATA3.2
 SATA2/7/WH/H/OP/VA/D/1/B/PA66
BLACK CONNECTOR

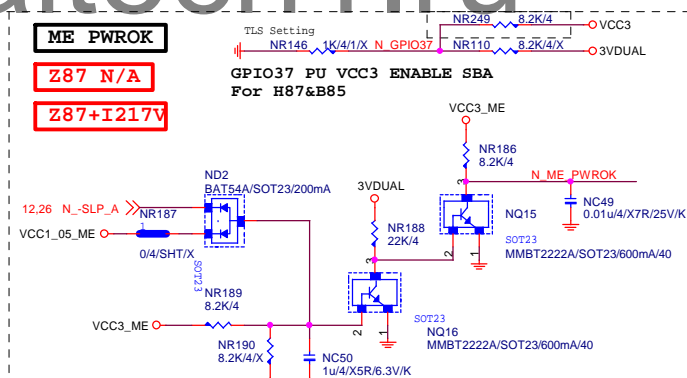
SATA2
 SATA2/7/BK/H/OP/VA/D/1/B
BLACK CONNECTOR

SATA2.0

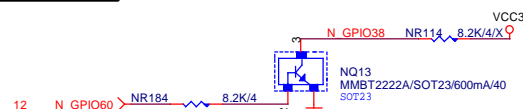
ME PWROK

Z87 N/A

Z87+I217V



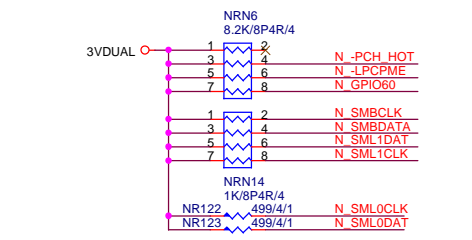
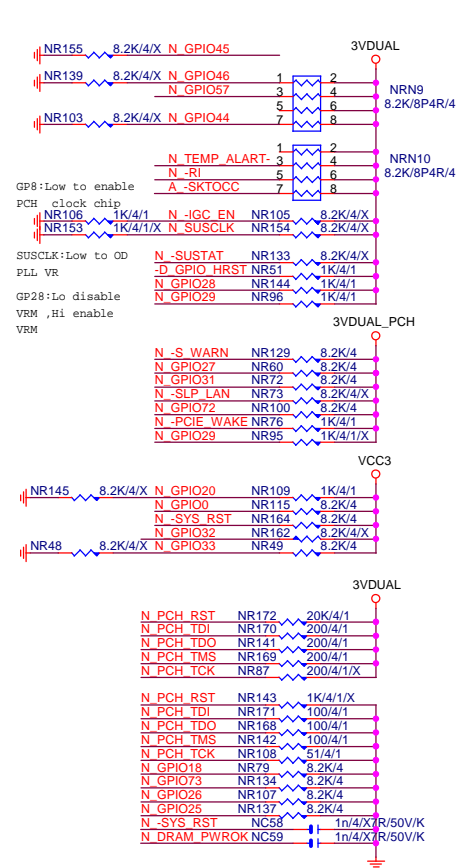
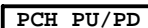
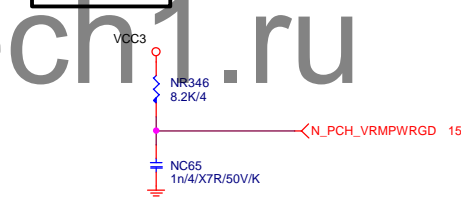
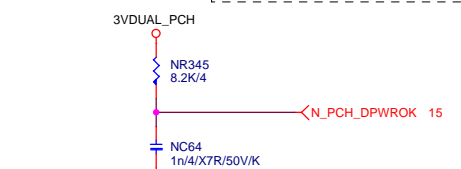
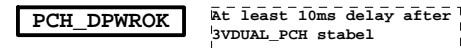
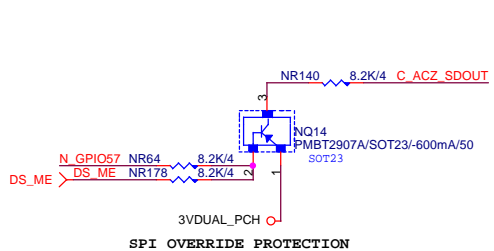
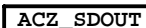
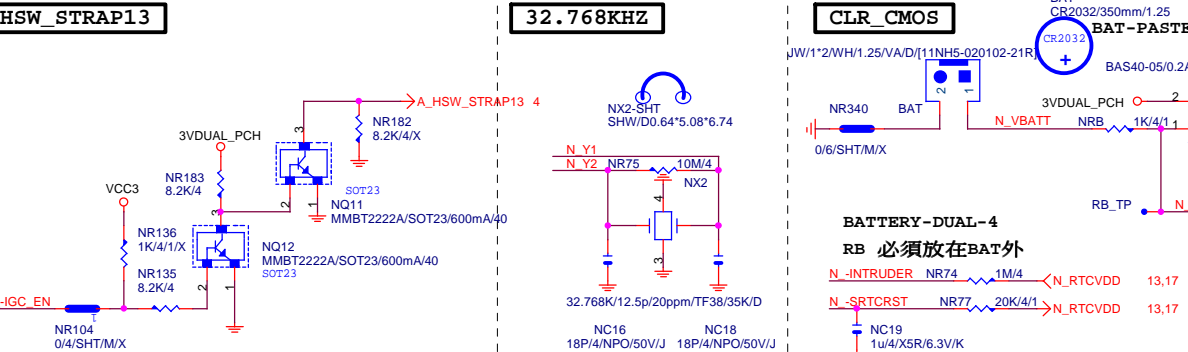
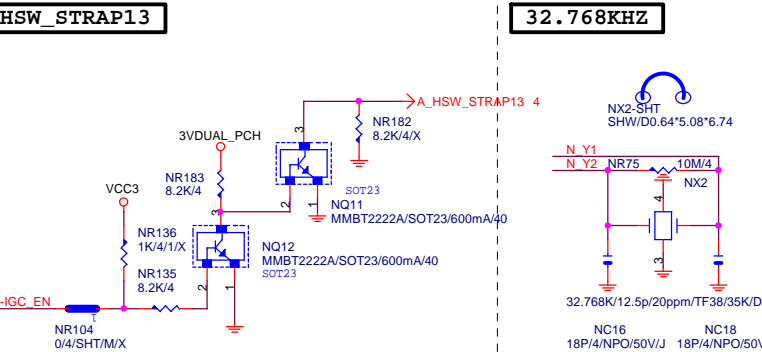
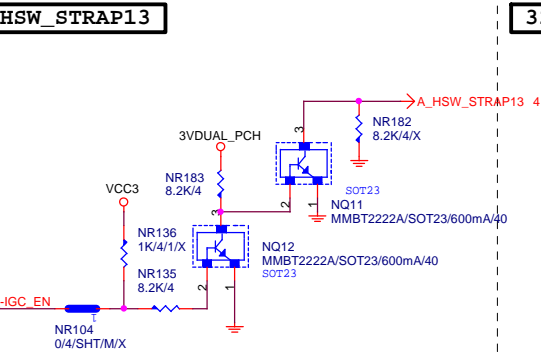
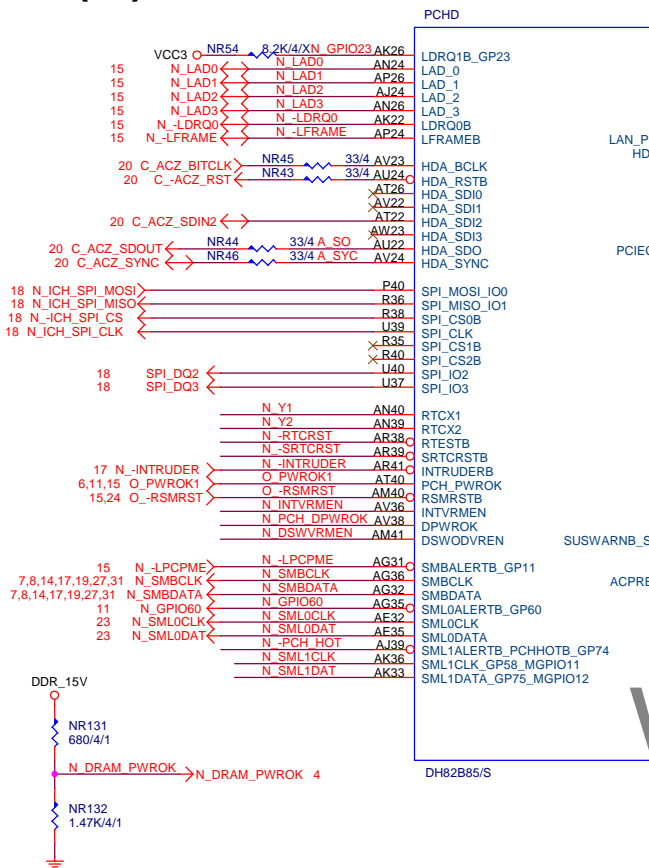
GPI038 Ctrl



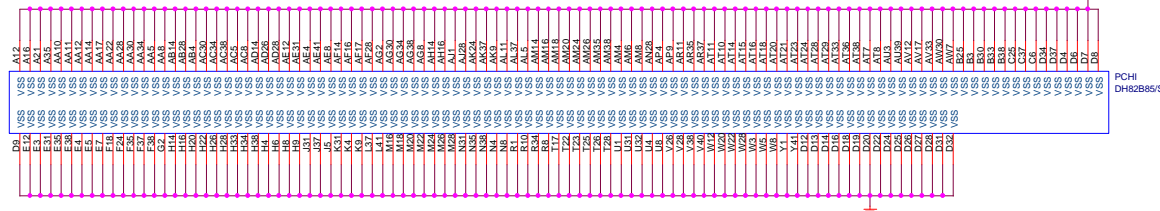
Gigabyte Technology

Title				PCH HOST , SATA, PCI			
Size	Document Number	GA-B85N-Phoenix-WIFI				Rev	
Custom						1.1	
Date:	Tuesday, April 01, 2014	Sheet	11	of	32		

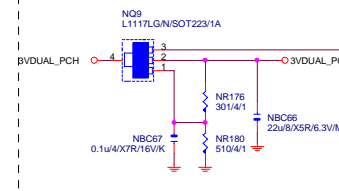
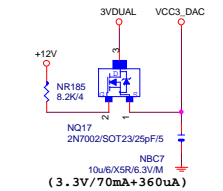
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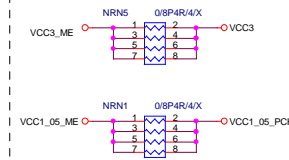
PCH (I)



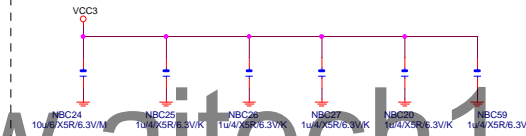
3VDUAL_PCH



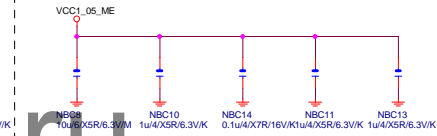
M3 POWER



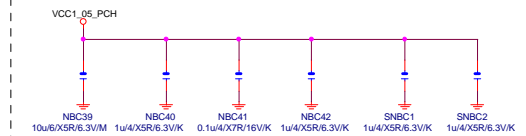
(3.3V) (X6)



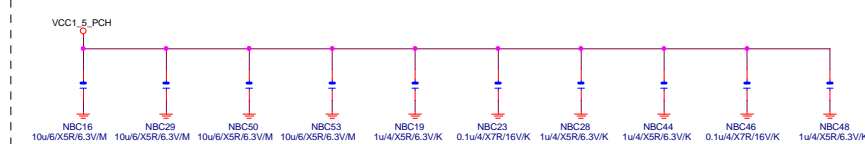
(1.05V) (x5)



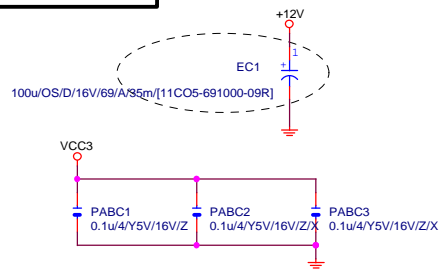
(1.05V)(x6)


$$(1.05V)(x2) + (3.3V)(x2)$$

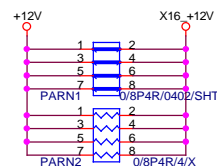

(1.05V) (x10)



PCIEX16 CAP



PCIEX16 PROTECT SHT



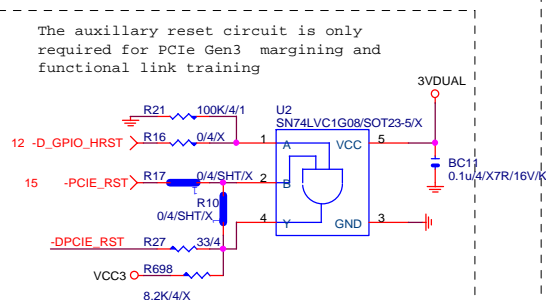
PCIEX16	AC	CAP
---------	----	-----

PA EXP TXP0	PAC5	0.22u4/X5R/6.3V/K	PA EXP TXP0 C
PA EXP TXN0	PAC4	0.22u4/X5R/6.3V/K	PA EXP TXN0 C
PA EXP TXP1	PAC6	0.22u4/X5R/6.3V/K	PA EXP TXP1 C
PA EXP TXN1	PAC7	0.22u4/X5R/6.3V/K	PA EXP TXN1 C
PA EXP TXP2	PAC8	0.22u4/X5R/6.3V/K	PA EXP TXP2 C
PA EXP TXN2	PAC9	0.22u4/X5R/6.3V/K	PA EXP TXN2 C
PA EXP TXP3	PAC10	0.22u4/X5R/6.3V/K	PA EXP TXP3 C
PA EXP TXN3	PAC11	0.22u4/X5R/6.3V/K	PA EXP TXN3 C
PA EXP TXP4	PAC12	0.22u4/X5R/6.3V/K	PA EXP TXP4 C
PA EXP TXN4	PAC13	0.22u4/X5R/6.3V/K	PA EXP TXN4 C
PA EXP TXP5	PAC14	0.22u4/X5R/6.3V/K	PA EXP TXP5 C
PA EXP TXN5	PAC15	0.22u4/X5R/6.3V/K	PA EXP TXN5 C
PA EXP TXP6	PAC16	0.22u4/X5R/6.3V/K	PA EXP TXP6 C
PA EXP TXN6	PAC17	0.22u4/X5R/6.3V/K	PA EXP TXN6 C
PA EXP TXP7	PAC18	0.22u4/X5R/6.3V/K	PA EXP TXP7 C
PA EXP TXN7	PAC19	0.22u4/X5R/6.3V/K	PA EXP TXN7 C
PA EXP TXP8	PAC20	0.22u4/X5R/6.3V/K	PA EXP TXP8 C
PA EXP TXN8	PAC21	0.22u4/X5R/6.3V/K	PA EXP TXN8 C
PA EXP TXP9	PAC22	0.22u4/X5R/6.3V/K	PA EXP TXP9 C
PA EXP TXN9	PAC23	0.22u4/X5R/6.3V/K	PA EXP TXN9 C
PA EXP TXP10	PAC24	0.22u4/X5R/6.3V/K	PA EXP TXP10 C
PA EXP TXN10	PAC25	0.22u4/X5R/6.3V/K	PA EXP TXN10 C
PA EXP TXP11	PAC26	0.22u4/X5R/6.3V/K	PA EXP TXP11 C
PA EXP TXN11	PAC27	0.22u4/X5R/6.3V/K	PA EXP TXN11 C
PA EXP TXP12	PAC28	0.22u4/X5R/6.3V/K	PA EXP TXP12 C
PA EXP TXN12	PAC29	0.22u4/X5R/6.3V/K	PA EXP TXN12 C
PA EXP TXP13	PAC30	0.22u4/X5R/6.3V/K	PA EXP TXP13 C
PA EXP TXN13	PAC31	0.22u4/X5R/6.3V/K	PA EXP TXN13 C
PA EXP TXP14	PAC32	0.22u4/X5R/6.3V/K	PA EXP TXP14 C
PA EXP TXN14	PAC33	0.22u4/X5R/6.3V/K	PA EXP TXN14 C
PA EXP TXP15	PAC34	0.22u4/X5R/6.3V/K	PA EXP TXP15 C
PA EXP TXN15	PAC35	0.22u4/X5R/6.3V/K	PA EXP TXN15 C

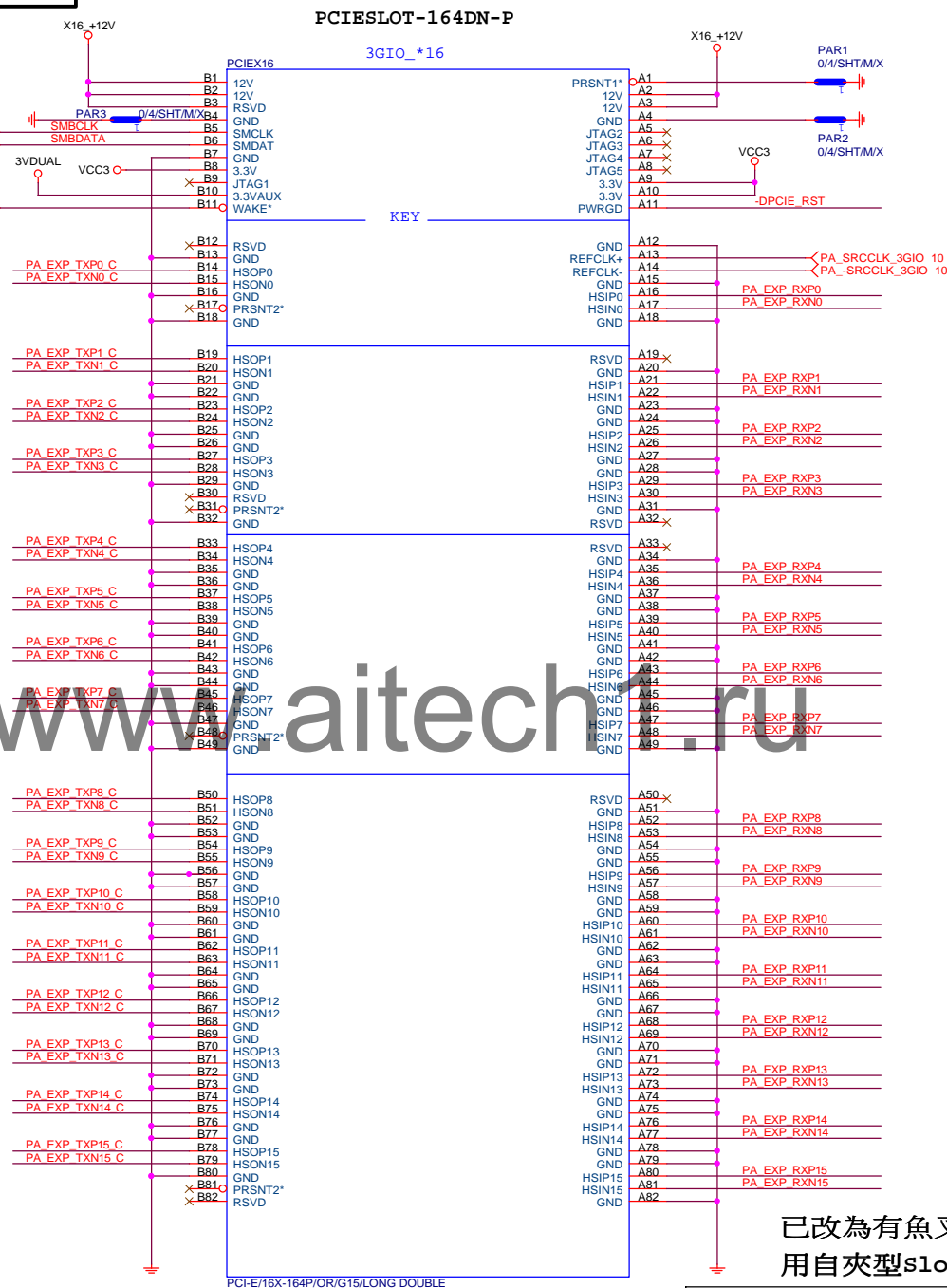
```

PA_EXP_RXP[0..15]  >> PA_EXP_RXP[0..15] 4
PA_EXP_RXN[0..15]  >> PA_EXP_RXN[0..15]
PA_EXP_TXP[0..15]  >> PA_EXP_TXP[0..15] 4
PA_EXP_TXN[0..15]  >> PA_EXP_TXN[0..15] 4

```



PCIEX16 SLOT



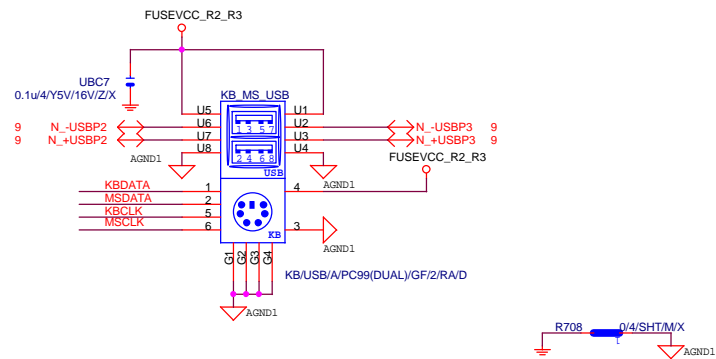
已改為有魚叉腳的slot
用自夾型slot

BLACK CONNECTOR

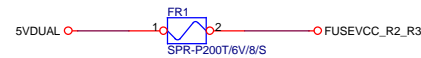
Gigabyte Technology

Title			
PCI EXPRESS * 16			
Size	Document Number		Rev
Custom		GA-B85N-Phoenix-WIFI	1.
Date:	Tuesday, April 01, 2014	Sheet 14 of 32	

KB/MS

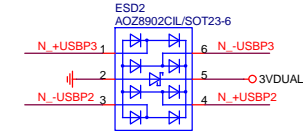


USB2.0 PWR

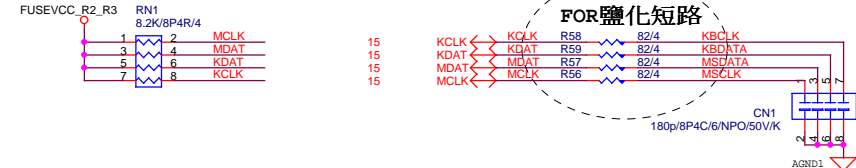


Close to connector
KB_MS_USB 2-Port 2.0A

USB2.0 ESD

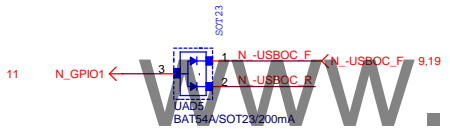
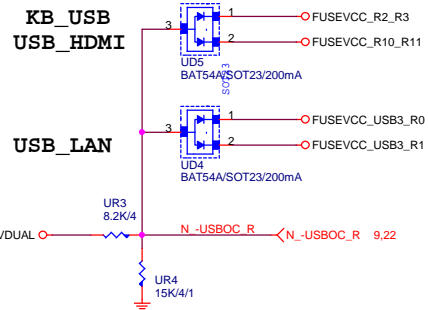


KB_MS



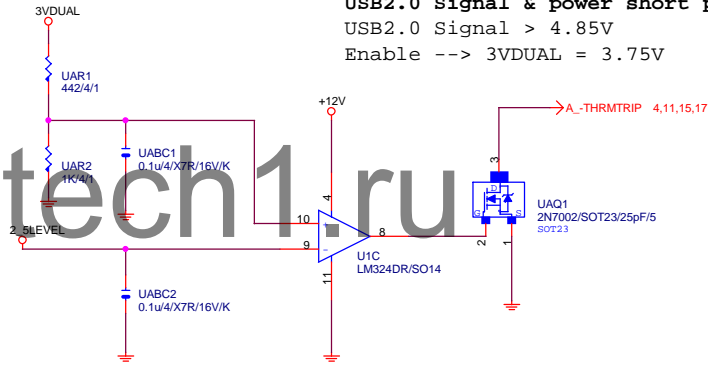
-USBOC_R

USB POWER PROTECT

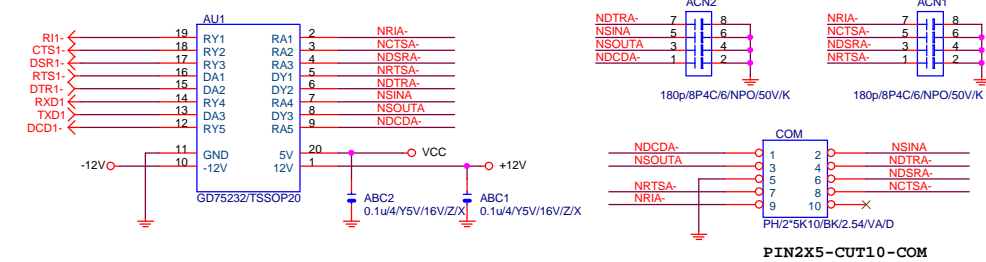


USB2.0 Short Power Protection

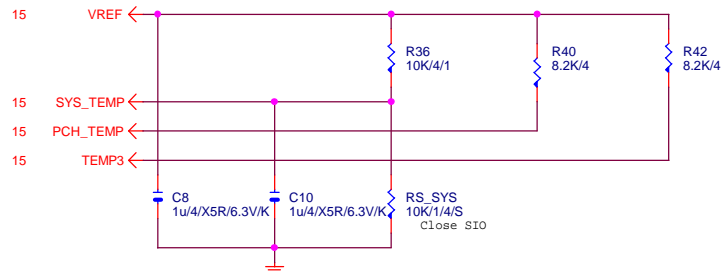
USB2.0 Signal & power short protection
USB2.0 Signal > 4.85V
Enable --> 3VDUAL = 3.75V



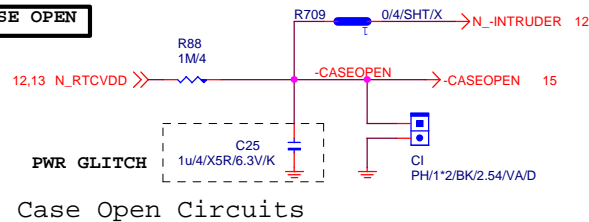
COM



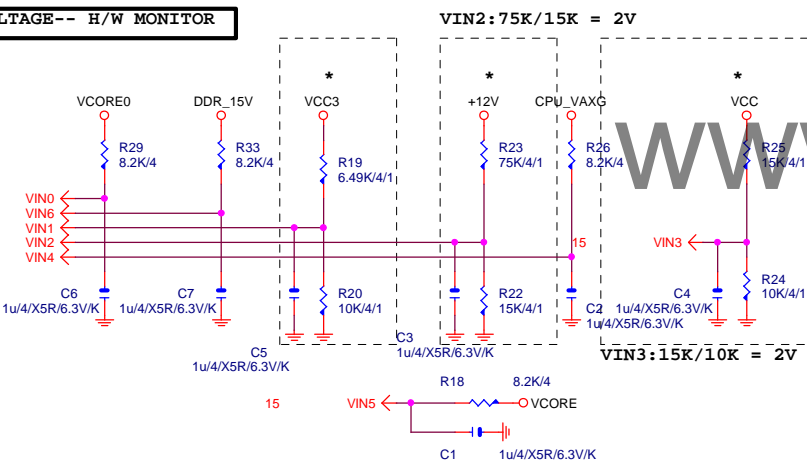
TEMP H/W MONITOR



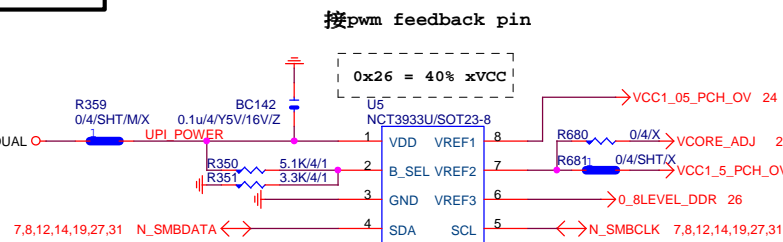
CASE OPEN



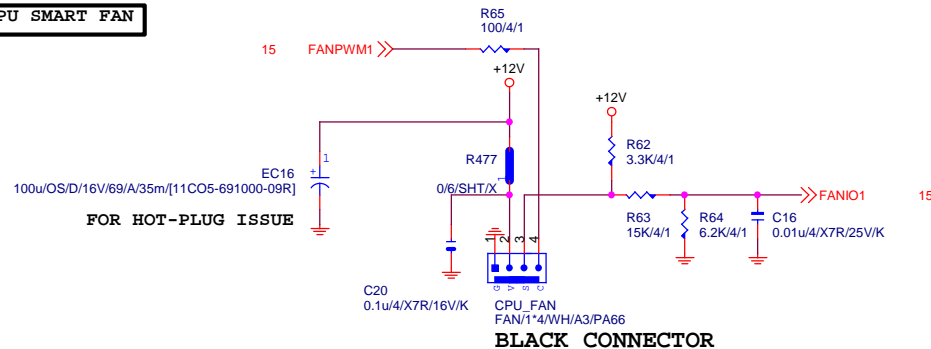
VOLTAGE-- H/W MONITOR



OV NCT3933

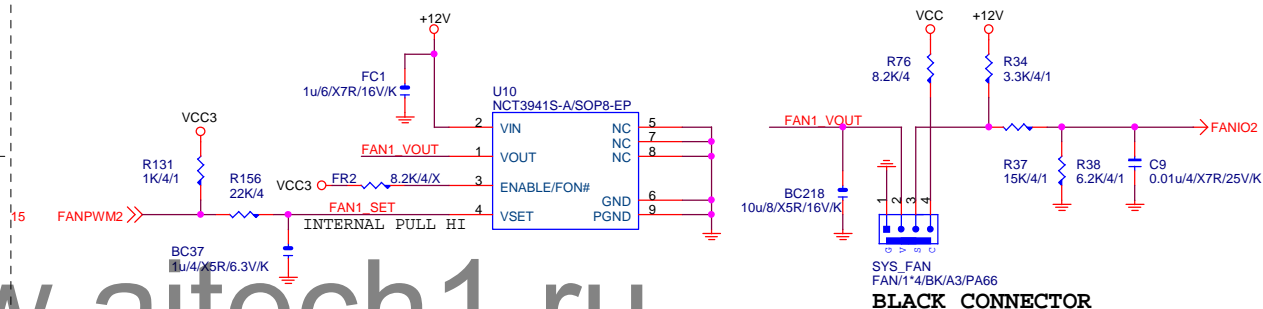


CPU SMART FAN

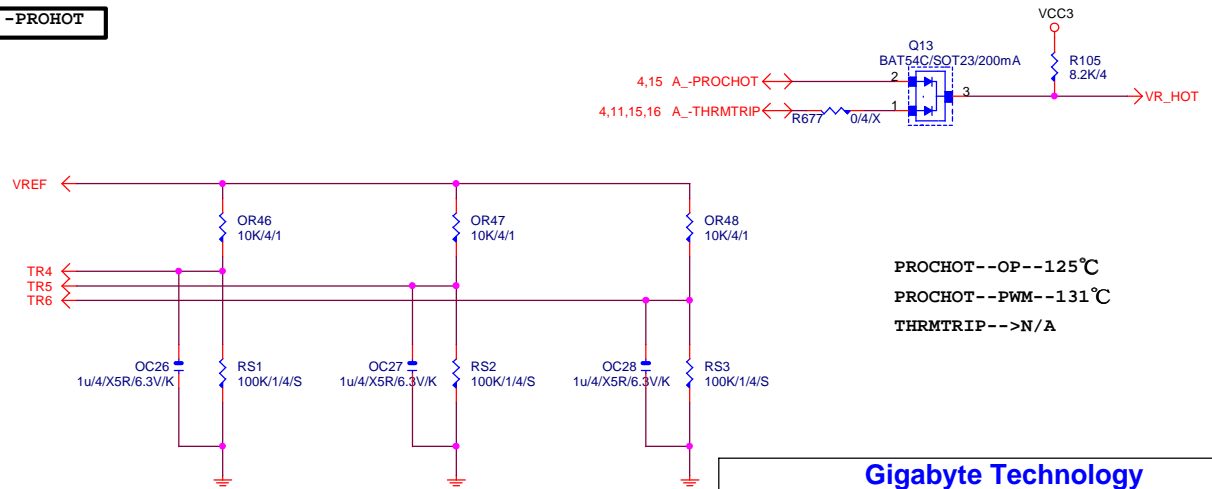


SYS SMART FAN

Linear SYS_FAN



-PROHOT

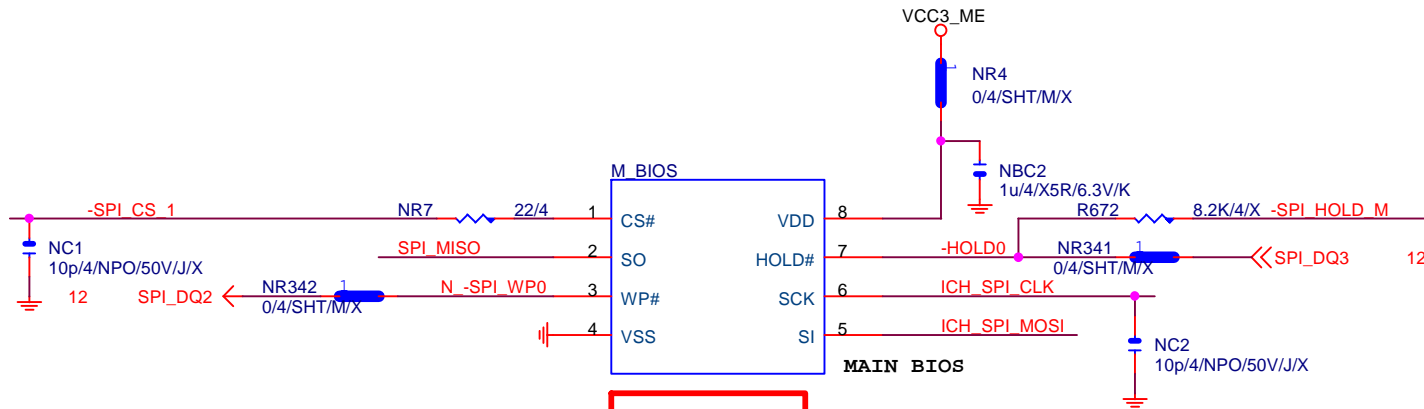


RS1、RS2、RS3 CLOSE CPU
VR MOSFET

Gigabyte Technology

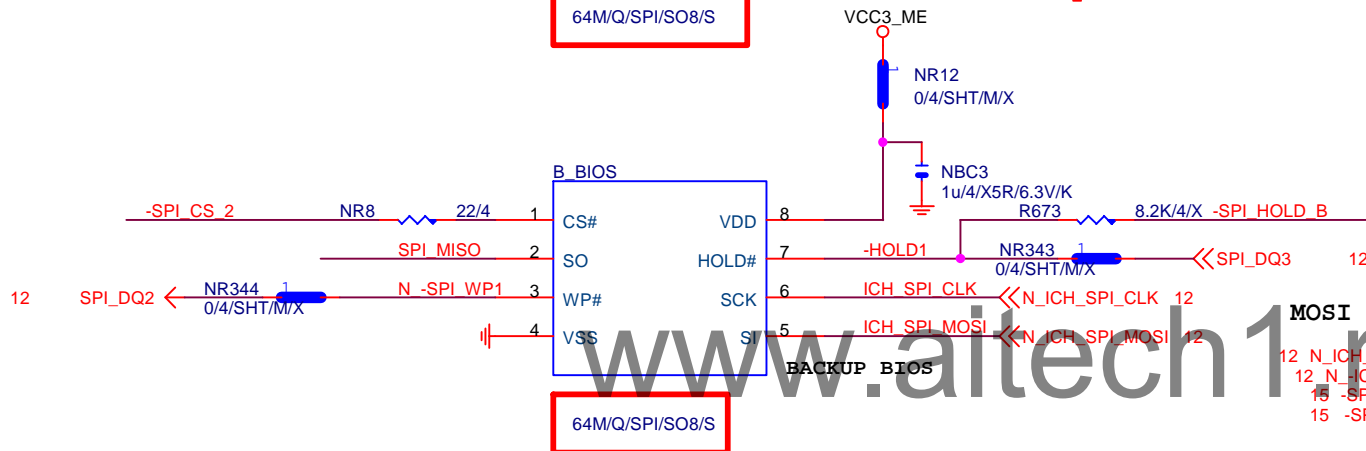
Title		HWM,FAN CTRL,OV	
Size	Document Number	Rev	
Custom			
Date: Tuesday, April 01, 2014		Sheet	17 of 32

GA-B85N-Phoenix-WIFI 1.1

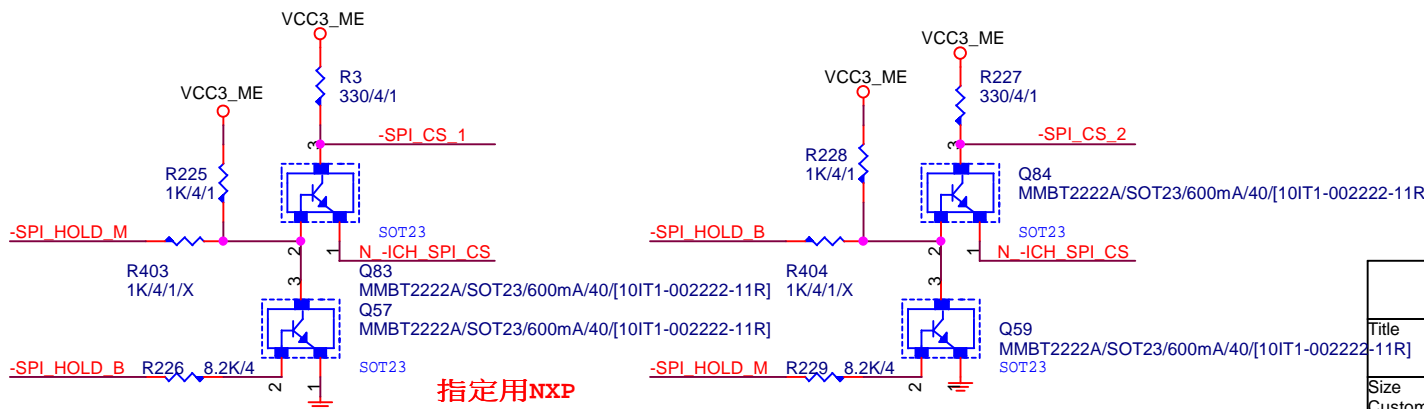
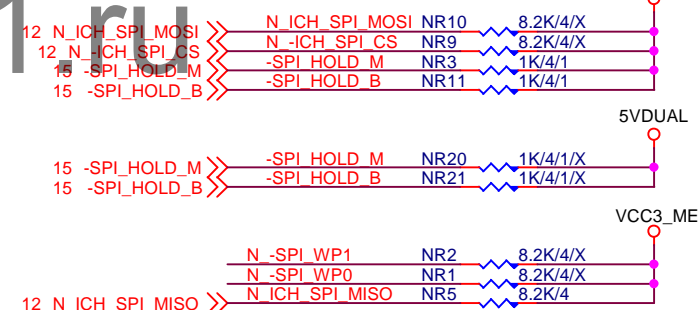


BOOT DEVICE	GNT0	GNT1
LPC	0	0
PCI	0	1
NAND	1	0
SPI	1	1

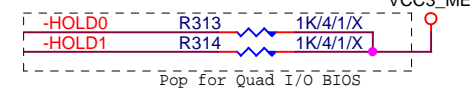
1 means floating
0 means PD 1K



MOSI For DMI RX Termination Voltage



CHECK

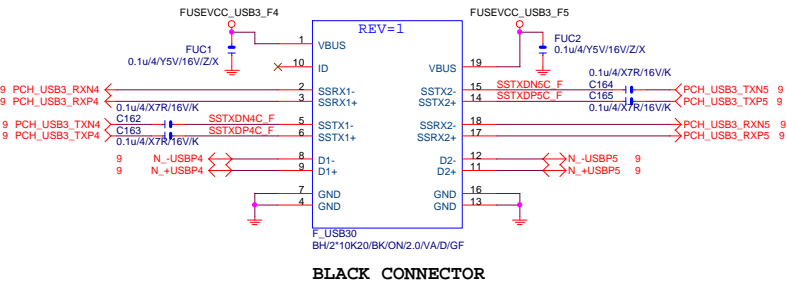


Gigabyte Technology

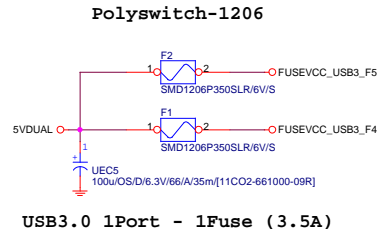
DUAL BIOS

Title	Document Number	Rev
Size Custom	GA-B85N-Phoenix-WIFI	1.1
Date	Tuesday, April 01, 2014	Sheet 18 of 32

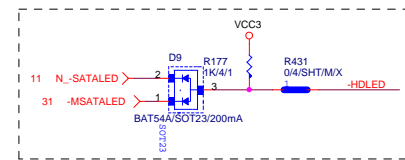
F_USB30



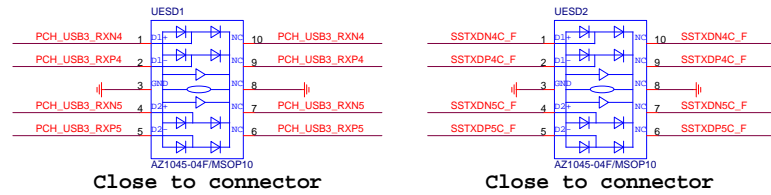
F_USB30 PWR



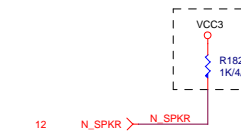
SATA LED



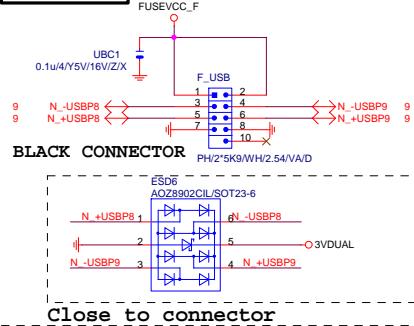
F_USB30 ESD PROTECT



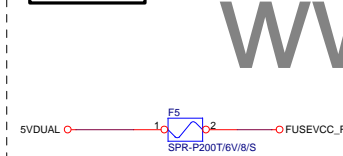
SPKR



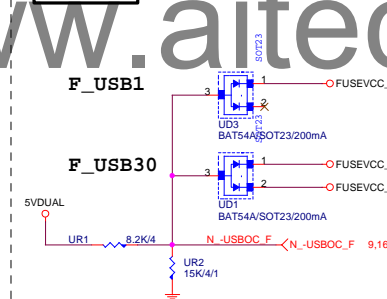
FRONT USB1



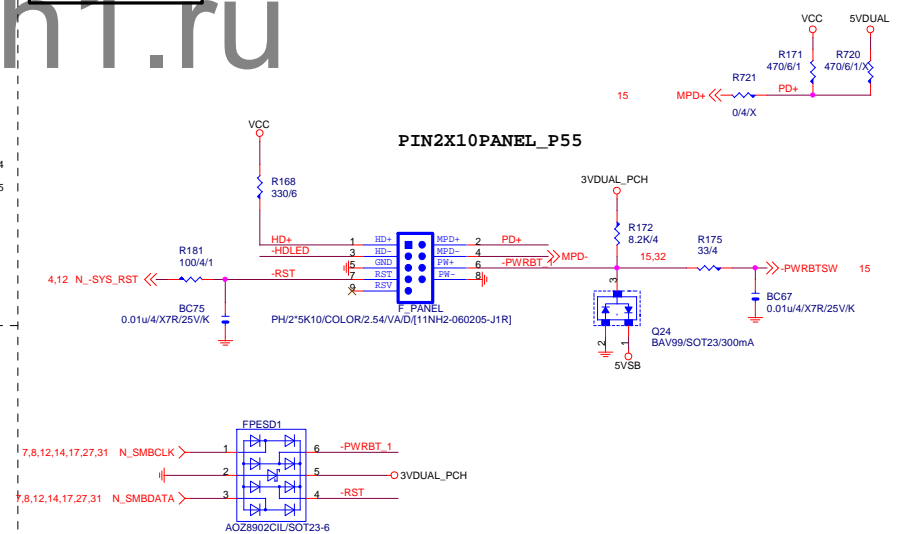
FUSEVCC_F



-USBOC_F



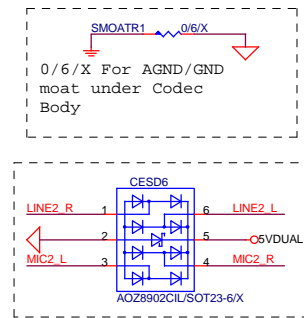
INTEL FRONT PANEL

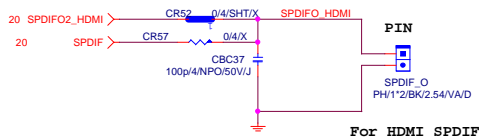
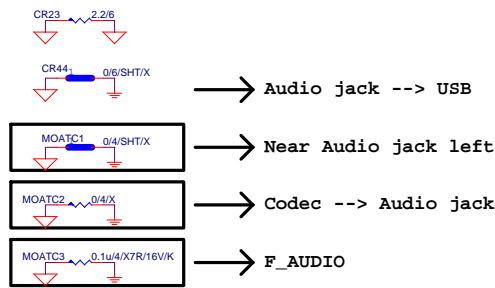


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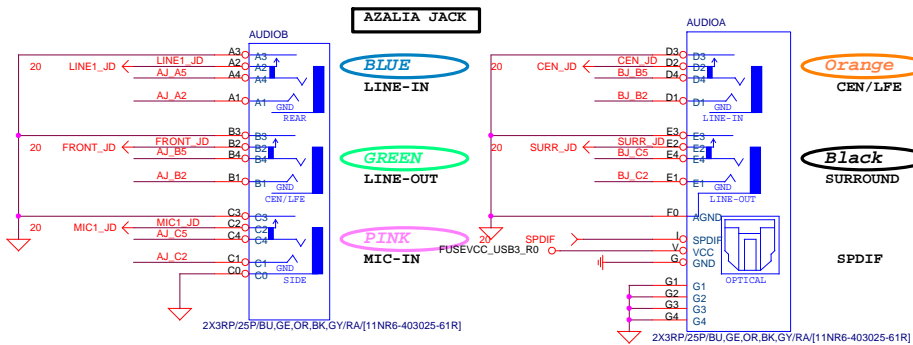
/ CR36: 20K/4/1% @Realtek cdec
/ CR36: 5.1K/4/1 @VIA cdec
/ CBC38 100P @VIA codec
/ CBC38 100p/4/NPO/50V/J

```

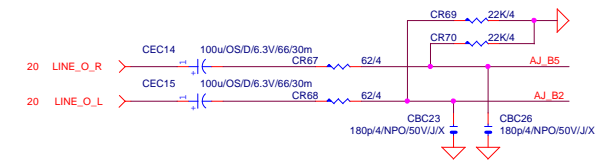




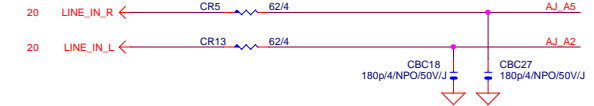
AZALIA JACK BTX AZALIA CONNECTOR



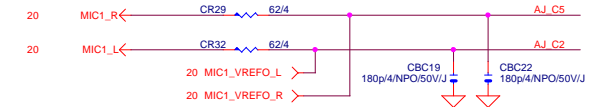
LINE-OUT



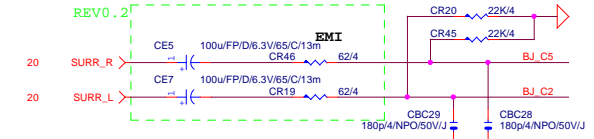
LINE-IN



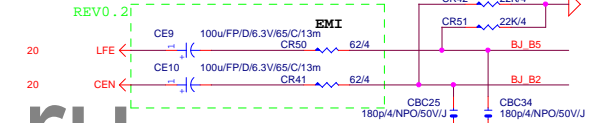
MIC-IN



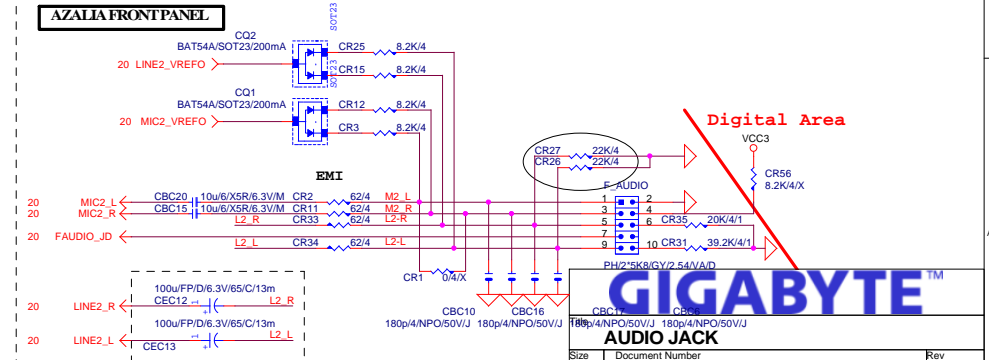
SURROUND

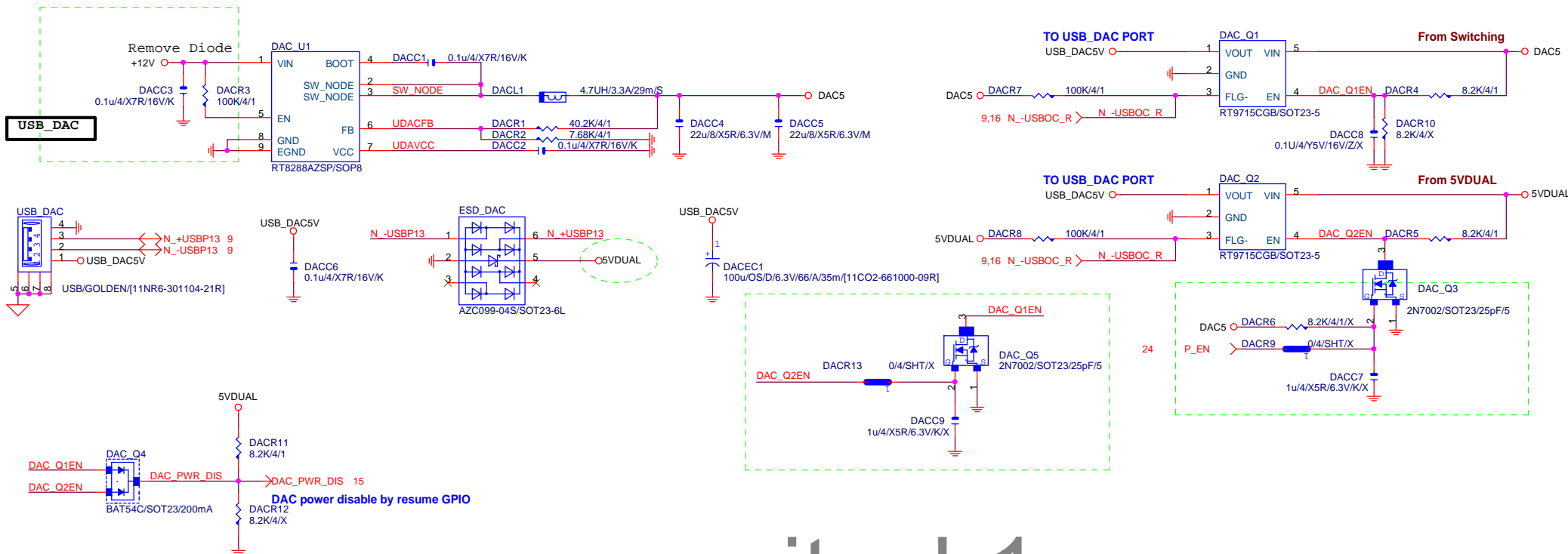


CEN/LFE



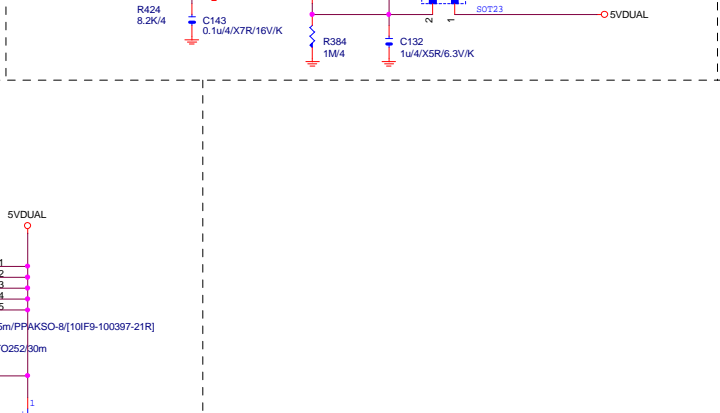
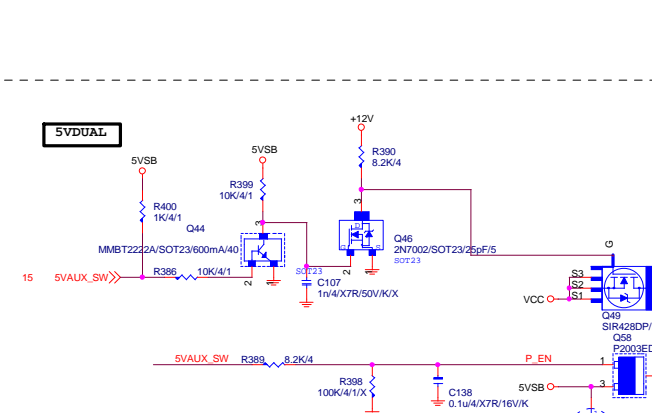
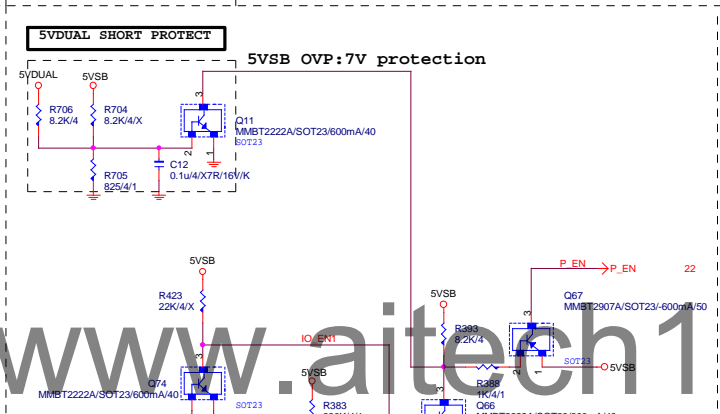
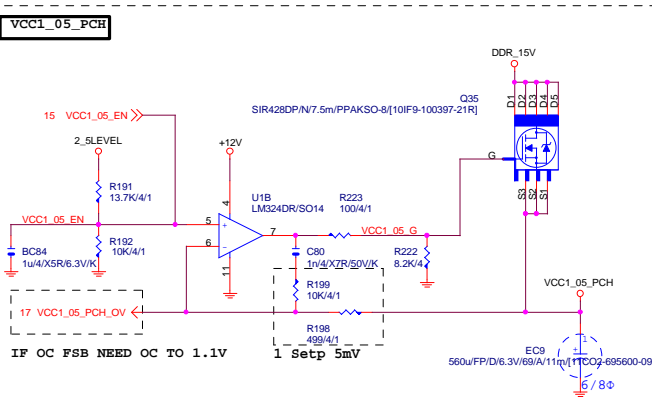
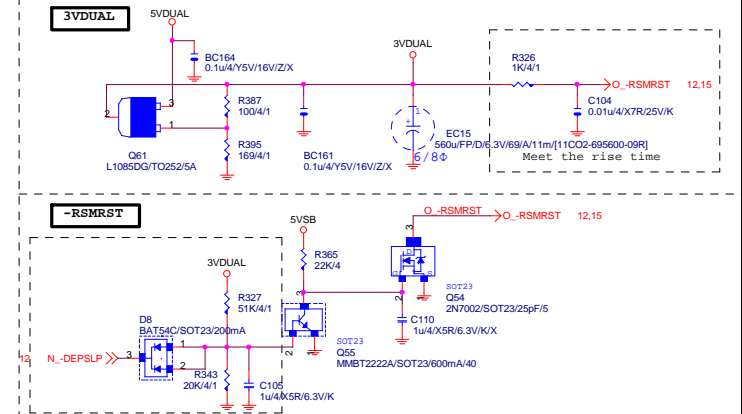
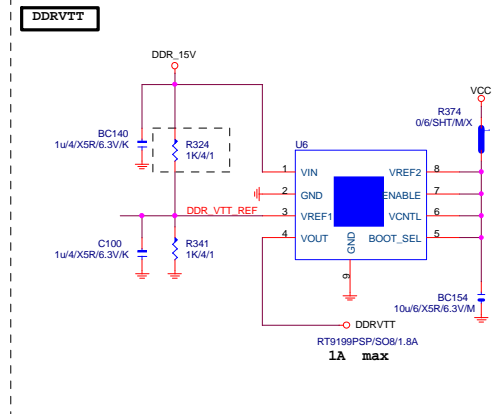
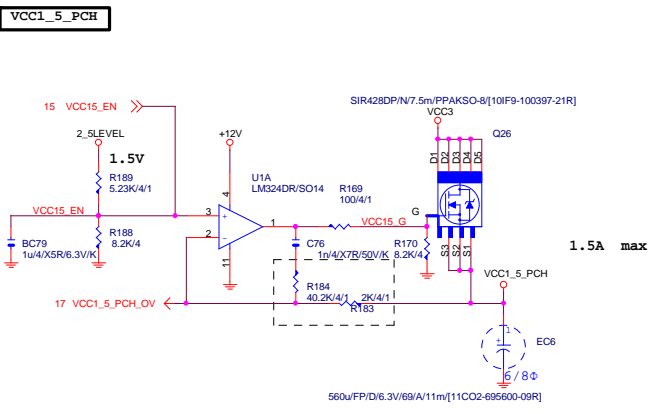
AZALIA FRONT PANEL



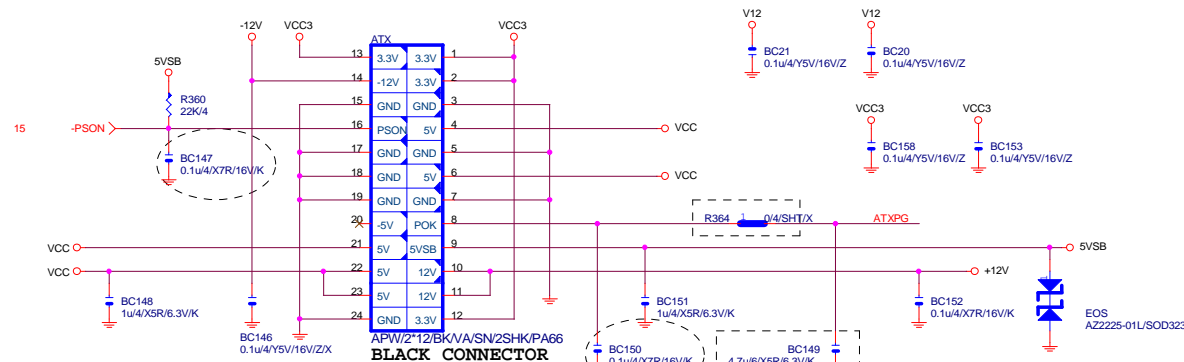


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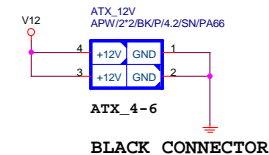
Gigabyte Technology			
Title			
USB DAC POWER			
Size	Document Number	Rev	
B	GA-B85N-Phoenix-WIFI	1.1	
Date:	Tuesday, April 01, 2014	Sheet	22 of 32



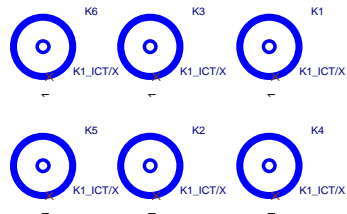
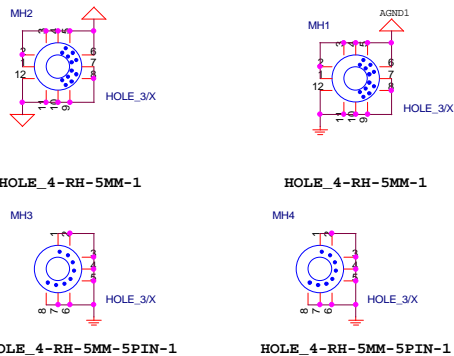
ATXX24 POWER CONNECTOR



ATXX4 POWER CONNECTOR

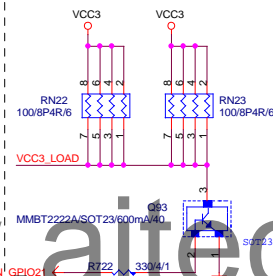


MB LOCATION



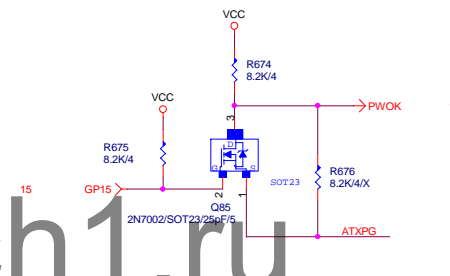
To prevent the 5VSB under loading when boot

FIX PWR MINMUN LOAD



PWOK PATCH

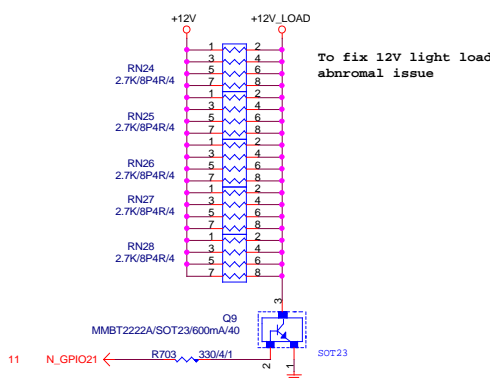
【技術通報R&D技術通報154】



CLK GEN

N/A

【技術通報R&D技術通報153】



Gigabyte Technology

ATX CONNECTOR

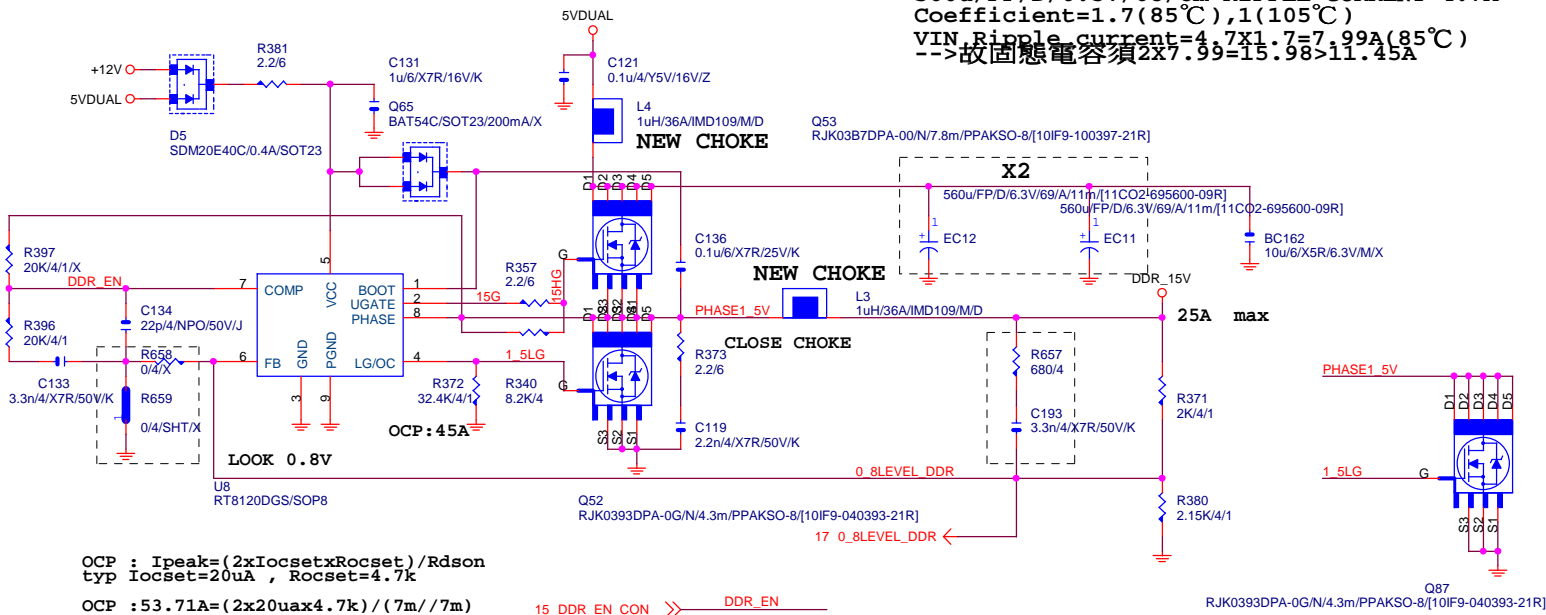
GA-B85N-Phoenix-WIFI

Rev 1.1

Date: Tuesday, April 01, 2014

Sheet 25 of 32

DDR15V

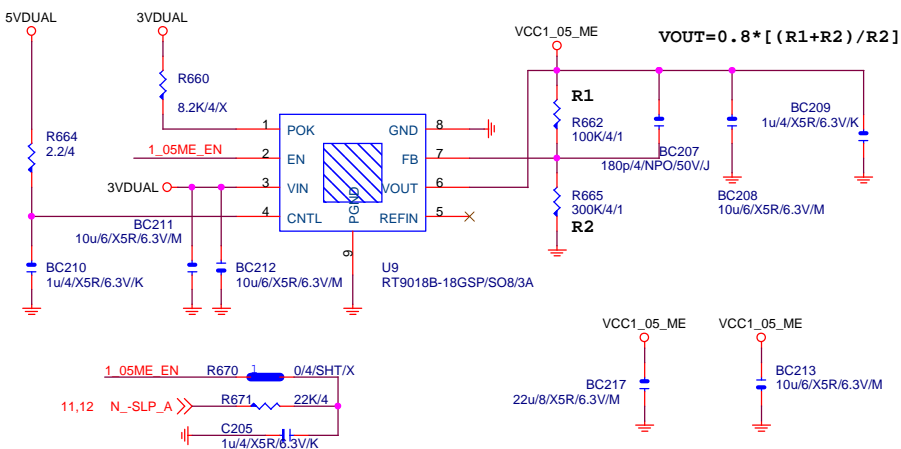


VCC1_05_ME

Z87 N/A

Z87+I217V

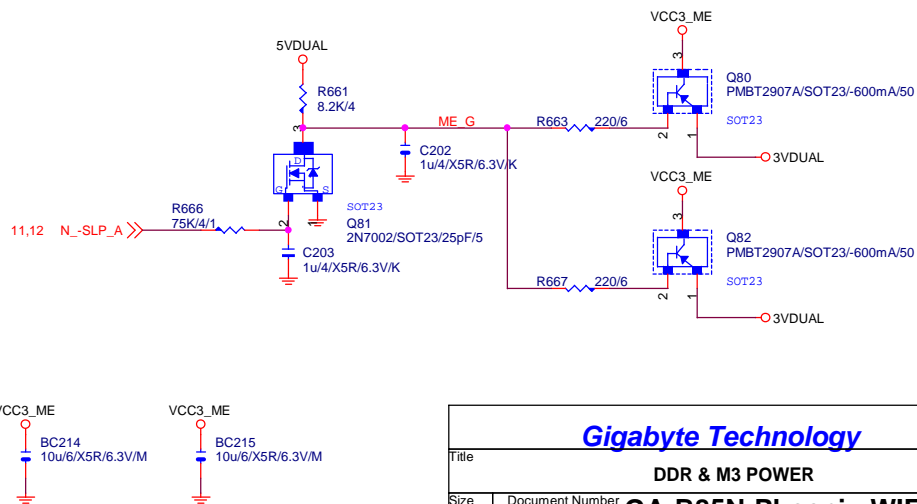
【技術通報R&D技術通報156】
(RICHTER), (NUVOTON), (EMC)做共用
PIN7分壓阻值須做修改為100K以上電阻值



VCC3_ME

Z87 N/A

Z87+I217V



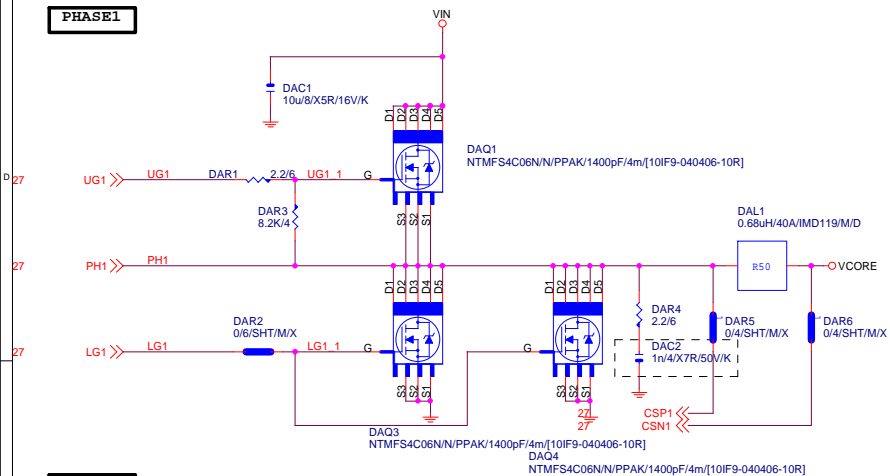
Gigabyte Technology

Title	DDR & M3 POWER
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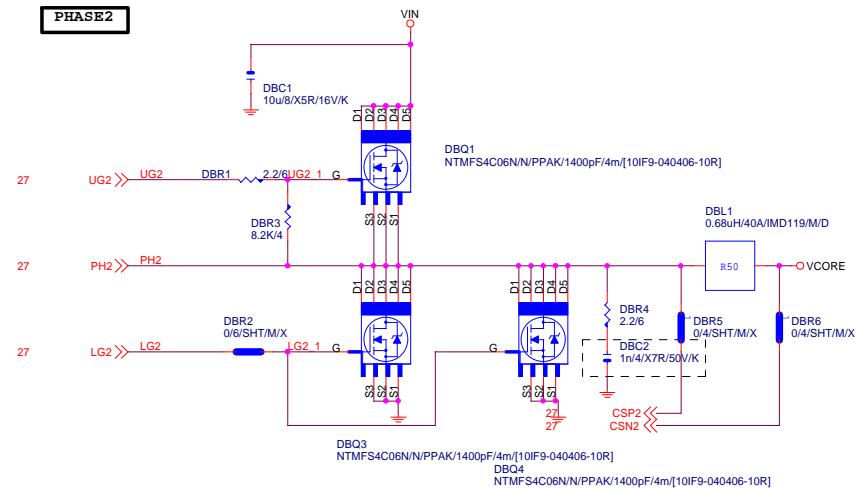
Size B	Document Number GA-B85N-Phoenix-WIFI	Rev 1.1
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Date: Tuesday, April 01, 2014 Sheet 26 of 32

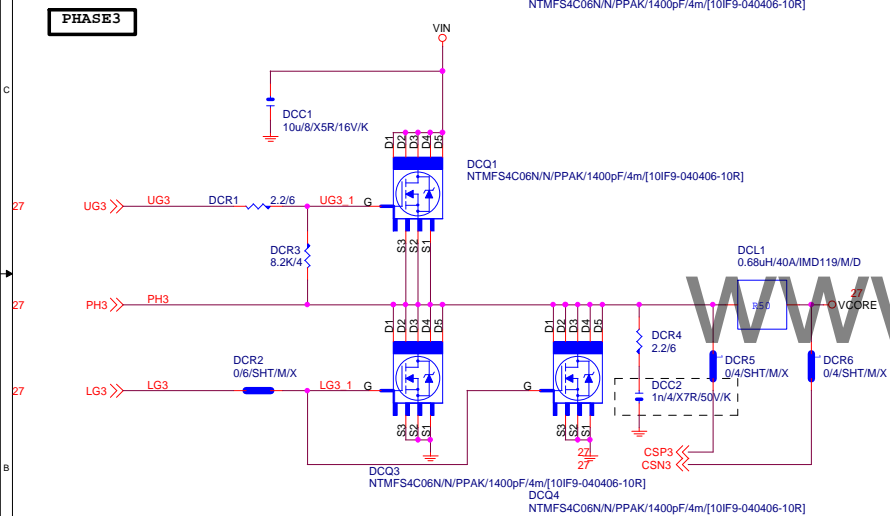
PHASE1



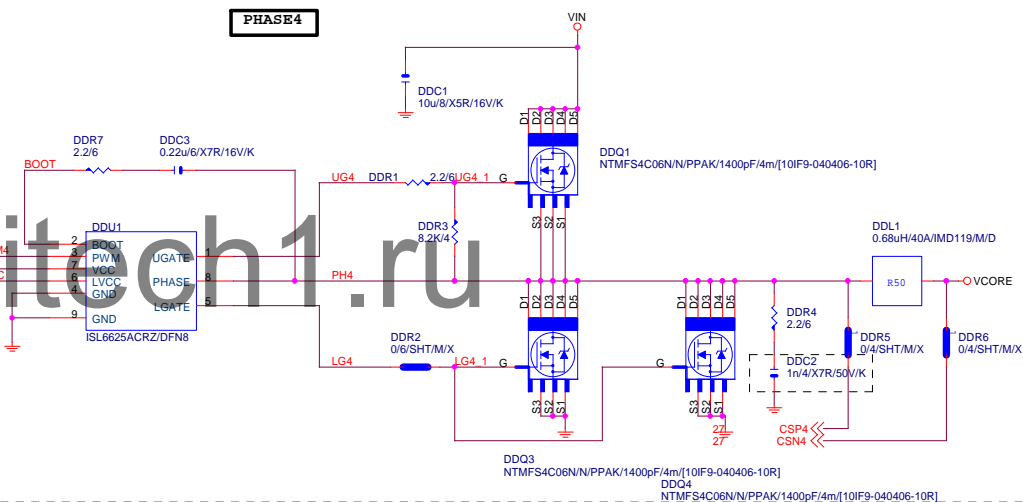
PHASE2



PHASE3

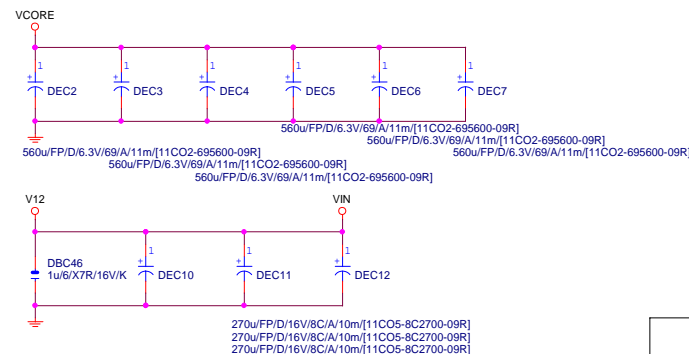


PHASE4



MOS HEATSINK

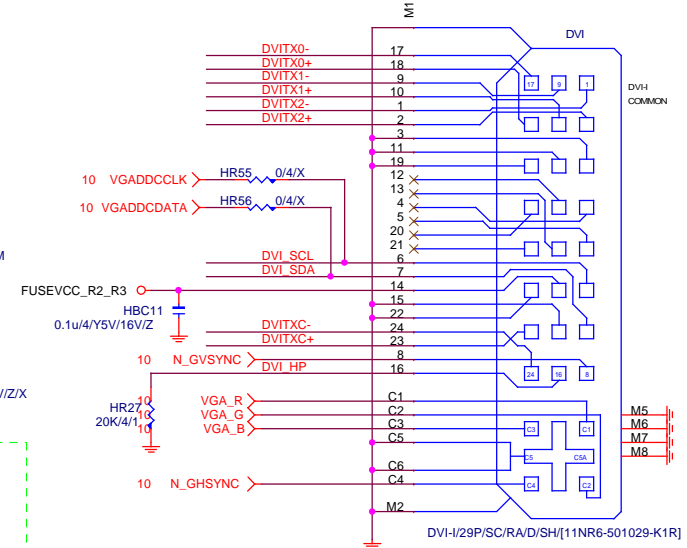
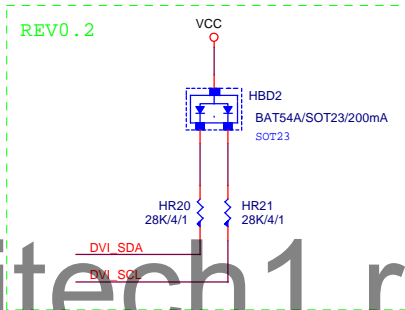
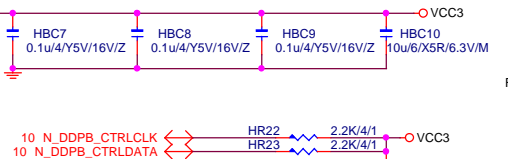
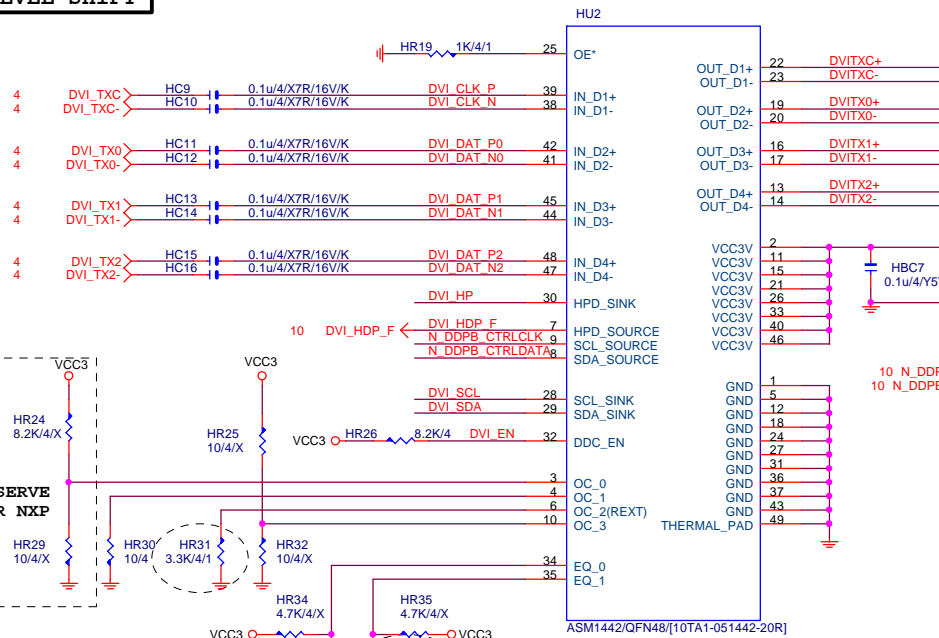
N/A



Gigabyte Technology

Title	CPU CORE VR-2		
Size	Custom	Document Number	GA-B85N-Phoenix-WIFI
Date	Tuesday, April 01, 2014	Sheet	28 of 32

DVI LEVEL SHIFT



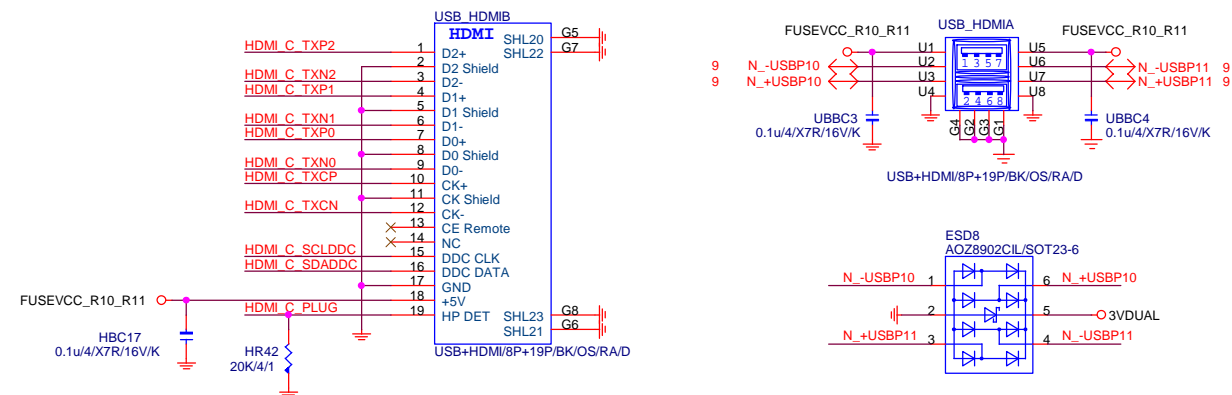
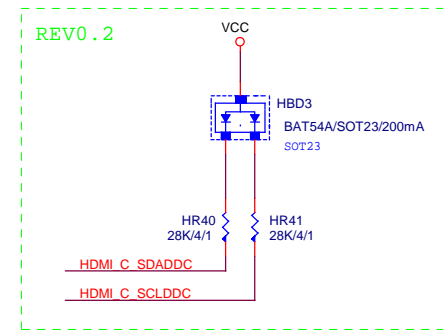
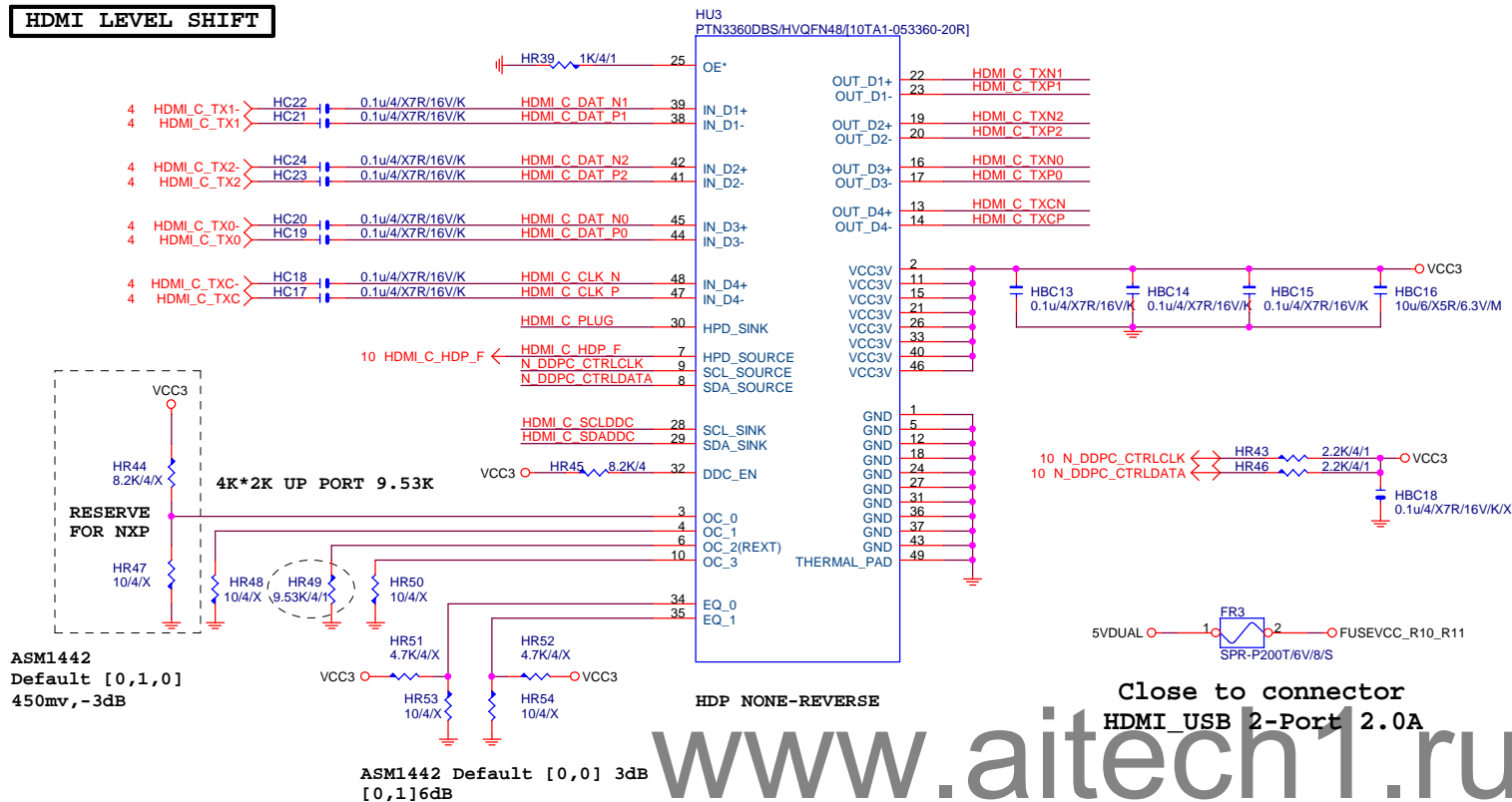
ASM1442
DEFAULT 0/1/1 SWING:460mV -4dB

ASM1442 1 1:3dB

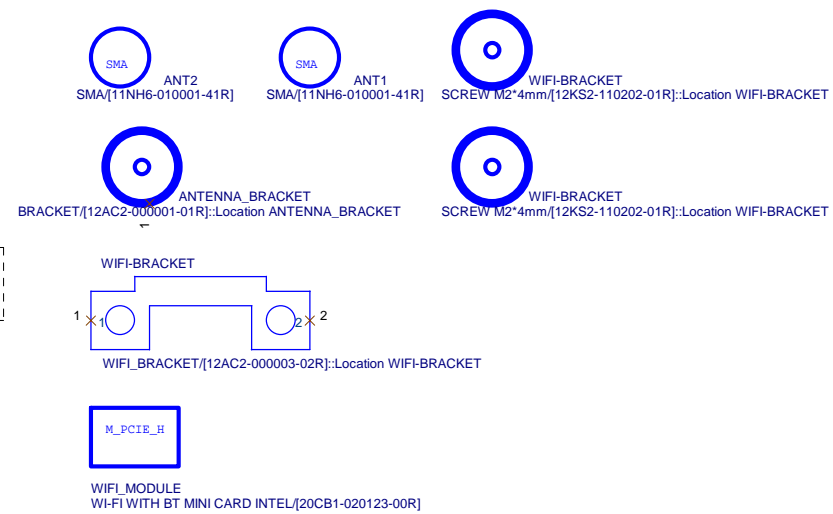
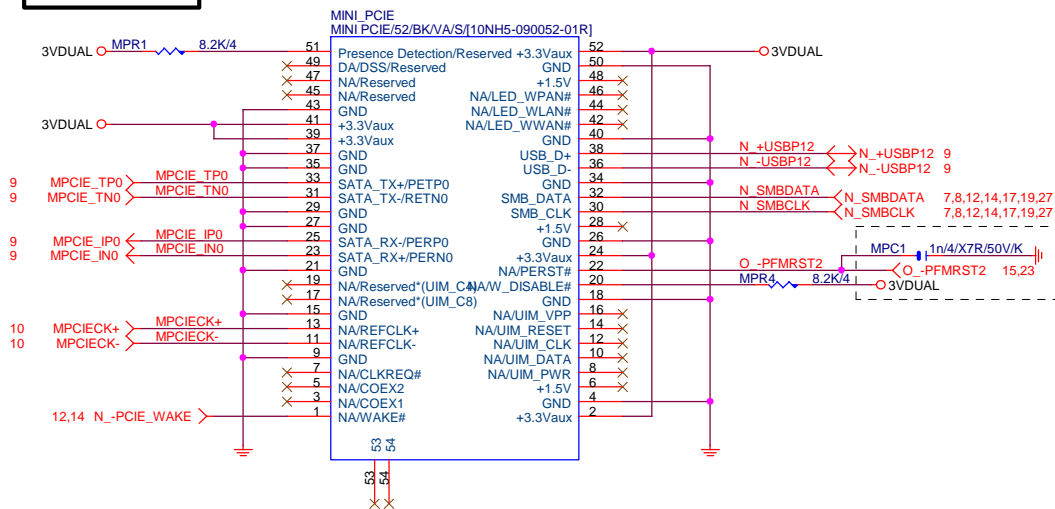
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Gigabyte Technology			
DVI			
Size	Document Number	GA-B85N-Phoenix-WIFI	
Custom		Rev 1.1	
Date:	Tuesday, April 01, 2014	Sheet	29 of 32

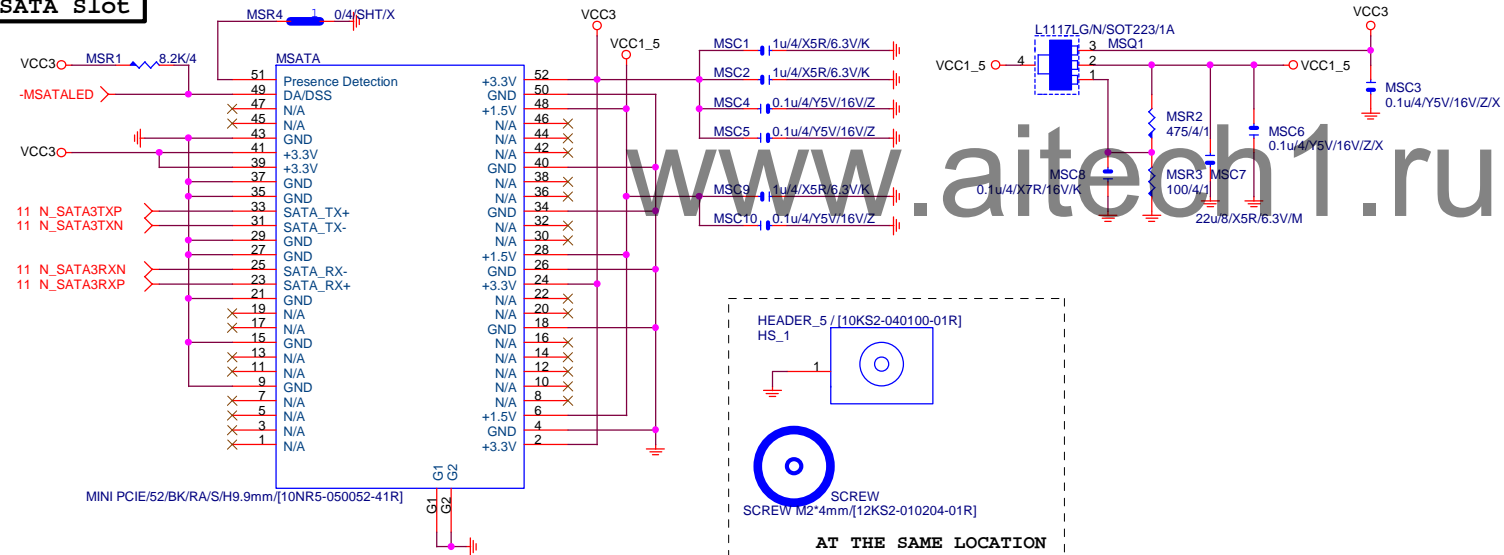
HDMI LEVEL SHIFT



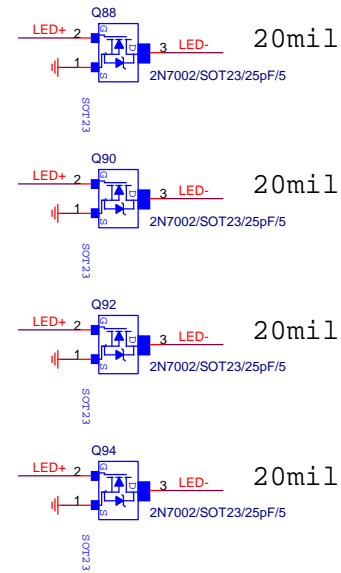
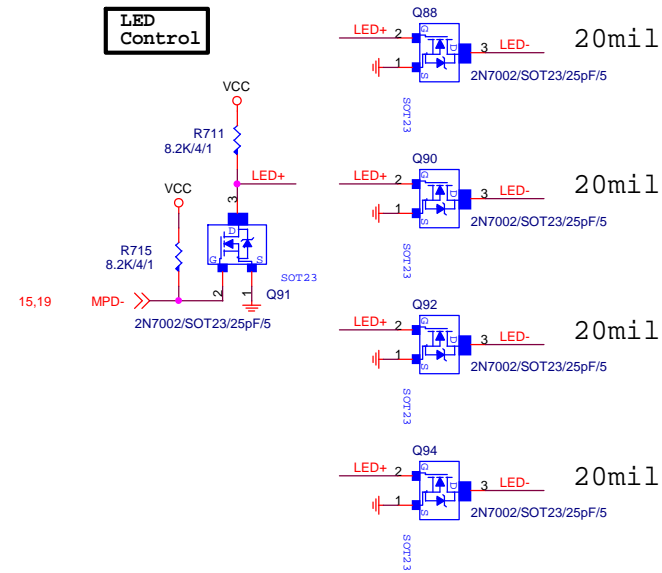
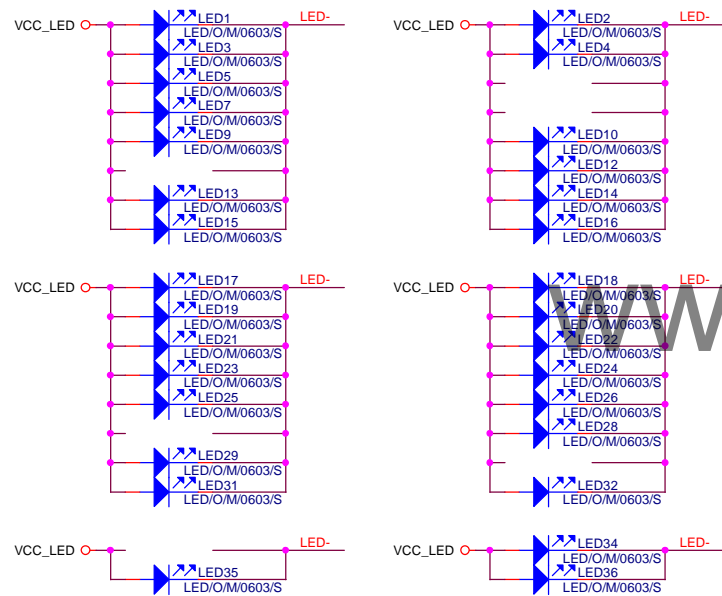
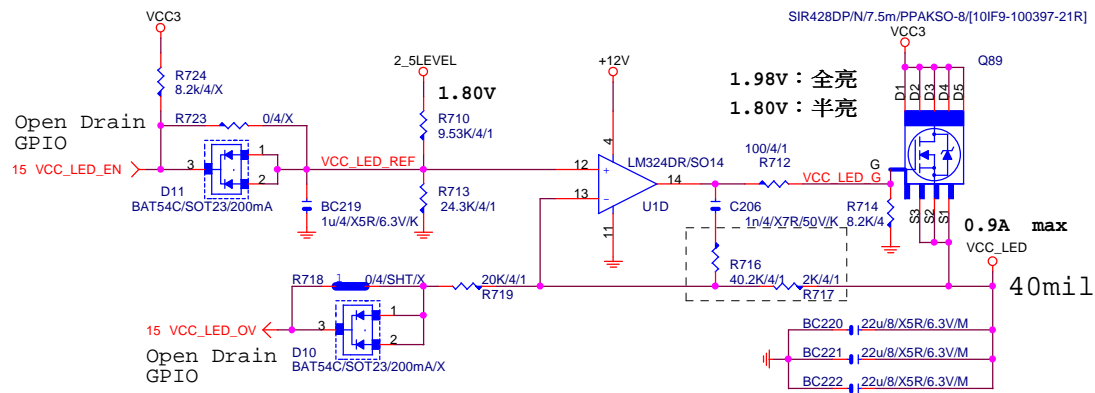
Mini PCIe



mSATA Slot



AT THE SAME LOCATION
螺柱HS需改為新的Size :
HOLE_C197S256D165



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Gigabyte Technology			
Title			
Breathing LED			
Size	Document Number	Rev	
B	GA-B85N-Phoenix-WIFI	1.1	
Date:	Tuesday, April 01, 2014	Sheet	32 of 32